Cause No. 46038

On Behalf of Petitioner,
DUKE ENERGY INDIANA, LLC

VERIFIED DIRECT TESTIMONY OF HARLEY Mc CORKLE

Petitioner's Exhibit 23

April 4, 2024

DIRECT TESTIMONY OF HARLEY McCORKLE
VICE PRESIDENT, ZONE OPERATIONS
DUKE ENERGY INDIANA, LLC
ON BEHALF OF DUKE ENERGY INDIANA, LLC
BEFORE THE INDIANA UTILITY REGULATORY COMMISSION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Harley McCorkle, and my business address is 100 S Mill Creek Road, Noblesville, Indiana.

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

A. I am employed as Vice President of Zone Operations by Duke Energy Indiana, LLC ("Duke Energy Indiana" or "Company").

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received a Bachelor of Science Degree in Business from Montreat College. I began my career at Duke Energy as a Marketing Representative in 1987 and have held a variety of positions of increasing responsibility across Duke Energy in generation and power distribution engineering and operations.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AND RESPONSIBILITIES AS VICE PRESIDENT OF ZONE OPERATIONS.

A. My current responsibilities include overseeing the safe, reliable, and efficient operations of Duke Energy's distribution systems for service areas in Indiana, including construction, maintenance, engineering, project management, and resource planning.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide an overview of Duke Energy Indiana's distribution system planning and expenditures. Specifically, I will present Duke Energy Indiana's distribution practices, which include forward-looking capital and operations outlays, under which the Company is making significant investments to maintain and improve the reliability of its distribution system, to enhance public safety, and grid modernization projects. I also discuss the metrics Duke Energy Indiana uses to measure the reliability of its distribution system. In addition, I will discuss the reliability programs Duke Energy Indiana has implemented. To execute the work involved with operating the Company's distribution system, I support the level of distribution capital expenses and operations and maintenance ("O&M") expenses during the historical base period from September 1, 2022, through August 31, 2023 (the "Base Period"), and the projected level of distribution capital expenses and O&M expenses during the forward-looking test period of January 1, 2025 through December 31, 2025.

I will discuss the distribution portion of Duke Energy Indiana's Transmission Distribution and Storage System Improvement Charge ("TDSIC") plan, approved by the Indiana Utility Regulatory Commission ("Commission") in Cause No. 44720 ("TDSIC Plan") and Cause No. 45647 ("TDSIC 2.0 Plan").[1] I will also discuss Duke Energy Indiana's storm costs.

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[1] The Office of Utility Consumer Counselor filed a notice of appeal in Cause No. 45647 with the Indiana Court of Appeals on July 15, 2022. On March 9, 2023, the Court of Appeals affirmed the Indiana Utility Regulatory Commission's approval of Duke Energy Indiana's TDSIC Plan in *Indiana Off. of Util. Consumer Couns. v. Duke Energy Indiana, LLC*, 205 N.E.3d 1026 (Ind. Ct. App.). The

I will describe Duke Energy Indiana's current distribution vegetation management program, which focuses on both maintaining our existing rights-of-way and on hazard tree identification and removal outside of our rights-of-way. For purposes of my testimony, I will be discussing the vegetation management program for our distribution system. Duke Energy Indiana witness Mr. Tim Abbott will discuss transmission vegetation management in his testimony.

II. DISTRIBUTION SYSTEM CONDITIONS

Q. PLEASE PROVIDE AN OVERVIEW OF DUKE ENERGY INDIANA'S DISTRIBUTION SYSTEM.

A. The Duke Energy Indiana electric delivery system provides electric service to approximately 900,000 customers as of February 2024 located within 69 out of Indiana's 92 counties. The number of customers is forecasted to increase to 918,000 by the end of the forward-looking test period. Duke Energy Indiana owns and operates all its electric distribution facilities.

Duke Energy Indiana's electric delivery system includes 481 substations, 63 transmission substations (locations with 69 kilovolt ("kV") or higher operating voltages) having a combined capacity of approximately 13,975 megavolt-amperes ("MVA"), 418 distribution substations (locations that supply one or more circuits at 35 kV or lower voltage) having a combined capacity of approximately 9,266 MVA. There are 31,800 distribution circuit miles in Indiana's service territory (29,286 at 12.47kV, 1,264 at 13.8kV, 51 at 34.5kV (delta), 893 at 34.5kV (wye), and 268 at 4.16kV). The Duke Energy Indiana electric delivery

Indiana Supreme Court granted transfer on June 22, 2023 and the case is currently awaiting final decision at the Indiana Supreme Court.

system includes various other equipment and facilities, such as control rooms, computers, capacitors, streetlights, meters and protective relays, and telecommunications equipment and facilities.

Q. HOW HAS THE DISTRIBUTION SYSTEM CHANGED SINCE DUKE ENERGY INDIANA'S LAST BASE RATE CASE?

A. The number of counties that Duke Energy Indiana services has not increased since the last base rate case, but economic development and residential housing growth has influenced the need for more infrastructure including substation capacity and line capacity. The number of retail Duke Energy Indiana customers has grown from 847,258 in 2019 to 895,647 in the Base Period.

Table 1

Year	RES	COM	IND	OTHER	Total
2019	740,711	91,985	2,696	11,866	847,258
2020	749,862	92,668	2,695	11,893	857,118
2021	759,447	93,391	2,689	11,852	867,379
2022	776,588	95,935	2,661	13,253	888,437

Customer growth continued throughout 2023. Table 2 depicts the number of retail customers as of Base Period and 2023.

Table 2

Year	RES	COM	IND	OTHER	Total
Base Period	783,374	96,503	2,648	13,122	895,647
2023	788,920	96,962	2,641	13,001	901,524

Q. PLEASE GENERALLY DESCRIBE HOW THE ELECTRIC DISTRIBUTION INFRASTRUCTURE IS DESIGNED, CONSTRUCTED, MANAGED, AND OPERATED.

A. The electric distribution infrastructure is designed to receive bulk power at transmission voltages, reduce the voltage to one of several distribution voltages and deliver power to customers' premises. The distribution infrastructure generally consists of substation power transformers, switches, circuit breakers, wood pole lines, underground cables, distribution transformers, and associated equipment. The physical design of the distribution system is also generally governed by the National Electrical Safety Code ("NESC").

Duke Energy Indiana operates the distribution facilities it owns in accordance with good utility practice. Duke Energy Indiana continuously runs the system with a workforce that provides customer service 24 hours per day, 7 days per week and includes trouble response crews. The Company monitors outages with various systems, such as Supervisory Control and Data Acquisition (or "SCADA"), and the Distribution Outage Management System ("DOMS").

Q. PLEASE GENERALLY DESCRIBE HOW DUKE ENERGY INDIANA CURRENTLY MONITORS AND MAINTAINS ITS DISTRIBUTION INFRASTRUCTURE AND ITS PERFORMANCE.

A. Duke Energy Indiana maintains its distribution infrastructure in accordance with good utility practice by adhering to inspections, monitoring, testing, and periodic maintenance programs. Examples of these existing programs include, but are not limited to, the following: (1)

substation inspection program; (2) surface mounted equipment inspection ("SMEI"); (3) ground-line inspection and treatment program; (4) vegetation management program; and (5) underground cable replacement program.

III. FIVE PILLARS

Q. PLEASE DESCRIBE WHICH OF THE FIVE PILLARS DESCRIBED IN WITNESS PINEGAR'S TESTIMONY HAVE BEEN CONSIDERED FOR DISTRIBUTION INVESTMENTS INCLUDED IN THIS PROCEEDING?

A. Electric system **reliability** is the adequacy and operational reliability of electric utility service. The first concept, adequacy, includes the ability of the electric system to supply electrical demand and energy requirements of its end users at all times, taking into account scheduled and reasonably expected unscheduled outages. The second concept, operational reliability, is the electric system's ability to withstand sudden disturbances, such as electric short circuits or unanticipated loss of system components.

Electric system **resiliency** describes the ability of a system or its components to adapt to changing conditions, withstand disruptions and off-nominal events, and rapidly recover.

Stability encompasses the ability of the electric system or its components to maintain a state of equilibrium during normal or abnormal conditions or disturbances.

As described in my testimony, the TDSIC and non-TDSIC investments the Company is making directly contribute to the reliability, resiliency, and stability of Duke Energy Indiana's distribution system. The investments that Duke Energy Indiana is making as part of its TDSIC 2.0 Plan not only take into account risk, but further extend a value-to-benefit proposition for each investment emphasizing reliability prioritization, hardening and resiliency improvements, stability, and enablement of distributed energy.

Non-TDSIC investments are more reactive, and they support mainly emergent equipment conditions, customer load growth and expansion, outage restoration, vegetation management, and system modifications and highway projects.

IV. RELIABILITY METRICS

Q. WHAT IS DUKE ENERGY INDIANA'S MAIN GOAL FOR ITS DISTRIBUTION SYSTEM?

A. The main goal of Duke Energy Indiana's distribution system is to provide safe and reliable power to satisfy our customers' needs.

Q. HOW DOES THE COMPANY MEASURE THE RELIABILITY OF ITS DISTRIBUTION SYSTEM?

A. Duke Energy Indiana uses various reliability indices to measure the effectiveness of its maintenance programs and system reliability. Below are the key reliability indices for Duke Energy Indiana for the 12 months ending December 31, 2023. The electric reliability measures included in Table 3 include the most recent metrics that are submitted to the Commission on an annual basis.

Table 3

Duke Energy Indiana, LLC		
Electric Reliability Measure	Reporting Year (12 Months Ending: December 31, 2023)	
	Total	Without Major Events
SAIFI	1.48 Interruptions/Customer	0.89 Interruptions/Customer
SAIDI	645.3 Minutes/Customer	98.0 Minutes/Customer

CAIDI	434.7 Minutes/Interruption	109.9 Minutes/Interruption
CI	1,315,559	790,285
CMI	571,390,429	86,841,290

Q. PLEASE EXPLAIN THE VARIOUS RELIABILITY INDICES DUKE ENERGY INDIANA USES.

A. Reliability indices are generally recognized standards for measuring the number, scope, and duration of outages. These indices are defined as follows:

- System Average Interruption Duration Index ("SAIDI") is the average time each customer is interrupted and is expressed by the sum of customer interruption durations divided by the total number of customers served.
- System Average Interruption Frequency Index ("SAIFI") is the system average frequency index and represents the average number of interruptions per customer. SAIFI is expressed by the total number of customer interruptions divided by the total number of customers served.
- Customer Average Interruption Duration Index ("CAIDI") is the average interruption duration or average time to restore service per interrupted customer and is expressed by the sum of the customer interruption durations divided by the total number of customer interruptions.
- Customer Interruption ("CI") is the loss of service due a force outage for more than five minutes, for one or more customers.
- Customer Minutes Interrupted ("CMI") is the number of minutes of forced outage duration multiplied by the number of customers affected.

Q. ARE THERE ANY CHALLENGES WITH THESE INDICES? IF YES, PLEASE EXPLAIN.

A. Yes. For example, CAIDI is a measure of how long an average interruption lasts. CAIDI can be lowered by reducing the length of interruptions but can also be lowered by increasing the proportion of shorter-than-average interruptions. As such, a reduction in CAIDI does not necessarily reflect an improvement in reliability; if SAIFI and SAIDI are both going down, but SAIFI is going down faster than SAIDI, CAIDI will go up even though reliability is getting better. In other words, CAIDI can move both up or down, regardless of reliability improving or degrading.

Q. HOW HAS DUKE ENERGY INDIANA ELECTRIC DISTRIBUTION INFRASTRUCTURE PERFORMED, AS MEASURED BY THESE RELIABILITY INDICES?

A. As measured by the reliability indices, Duke Energy Indiana has performed well. As demonstrated in Table 3.a below, reliability scores have demonstrated an overall trend of improvement since 2019.

Table 3.a

Duke Energy Indiana T&D Reliability Improvement 2024 Rate Case Filing					
	2019	2020	2021	2022	2023
SAIFI	1.07	0.95	0.94	1.16	0.89
SAIDI	140.4	121.0	127.1	160.4	98.0
SAIDI (Vegetation Related)	44.1	34.2	36.0	40.4	23.0
CAIDI	131.7	127.0	135.9	138.5	109.9
CI	903,088	833,043	806,617	1,013,797	790,285
CMI	119,013,169	105,994,868	109,684,636	140,315,343	86,841,290

***Information in the table above excludes MEDs**

Q. WHAT EFFORTS HAS DUKE ENERGY INDIANA UNDERTAKEN TO IMPACT CUSTOMER RELIABILITY?

A. Overall, the Duke Energy Indiana grid is reliable and well-maintained. While the Company has worked hard to maintain the system to reliably meet the needs of customers, more must be done to improve the Company's energy infrastructure and enhance the customer's energy experience. Duke Energy Indiana has a dedicated team supporting activities to improve customer reliability. Engineers proactively identify equipment that can improve reliability on the system and make recommendations for investments, based on their assessments. Other team members review outages that meet a certain threshold and inspect the distribution lines and recommend reliability improvement projects, such as Targeted Undergrounding. The planning group identifies automation, such as Self-Optimizing Grid, that can be installed on distribution lines to provide backup power sources and isolate issues in the event of power loss from one source.

Q. WHAT ARE THE PRIMARY CAUSES OF DISTRIBUTION OUTAGES IN DUKE ENERGY INDIANA'S SERVICE TERRITORY?

A. Over the last four years, the three major causes of outages have been vegetation related outages, equipment failure, and planned outages to perform system upgrades as shown in Table 4. For example, in 2023, 19.41% of all distribution outages were related to vegetation and 15.71% to equipment failure.

Table 4

Outage Cause	% of Total Number of Outages Excluding MEDs			
	2020	2021	2022	2023
Vegetation	22.85%	23.46%	21.25%	19.41%
Wildlife	11.83%	10.00%	11.73%	11.08%
Public Accident/Damage	6.99%	6.47%	6.14%	6.83%
Unknown Cause	7.65%	7.31%	8.96%	12.15%
Lightning Strike	3.51%	2.82%	2.68%	1.88%
Equipment Failure	16.46%	17.80%	17.67%	15.71%
Other Cause	11.53%	10.18%	9.57%	8.54%
Loss of Transmission/Generation	0.33%	0.49%	0.29%	0.46%
Weather	3.44%	2.12%	3.46%	3.74%
Planned	15.42%	19.35%	18.25%	20.20%

Q. DOES DUKE ENERGY INDIANA TRACK CUSTOMER OUTAGE SATISFACTION?

A. Yes. The number of outage information points provided via proactive SMS text and the Company's Outage Maps (including Crew Status, estimated time of restoration ("ETR") and Cause code rates) are up, signaling the Company's field crews' continuous improvement and dedication to keeping customers informed. These increases highlight how key investments the Company has made in its customer digital channels are supporting our customers' desire for more and faster communication.

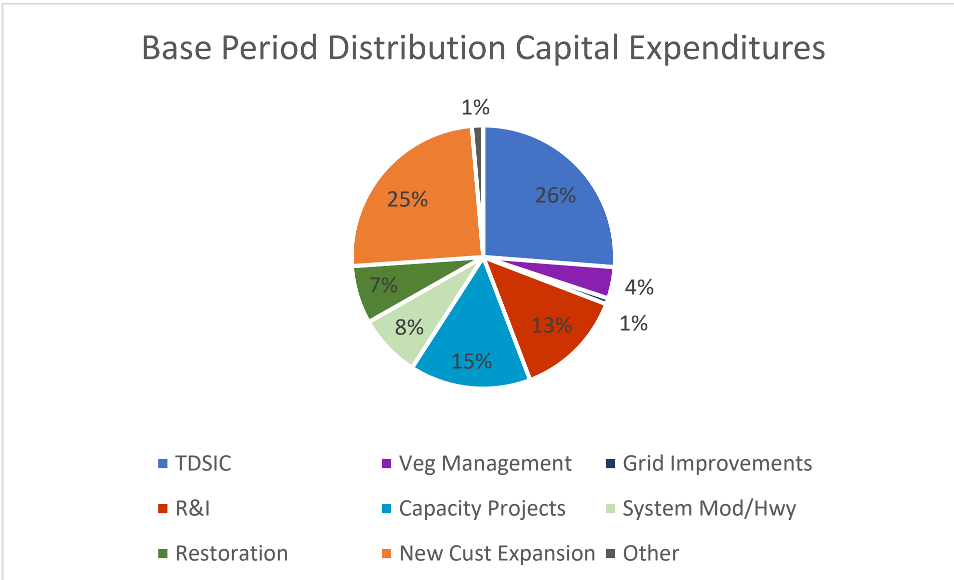
Results collected in Fastrack, the Company's ongoing post-transaction customer satisfaction study, reflects positive customer feedback with customers reporting improved performance in being 'Kept Informed' and receiving 'Useful Information'. Further, Duke Energy Midwest finished as a top quartile performer among large utilities nationally in 'Keeping Customers Informed About an Outage' in the 2023 J.D. Power Electric Utility Residential Customer Satisfaction Study.

V. DISTRIBUTION EXPENDITURES

Q. WHAT WAS DUKE ENERGY INDIANA'S TOTAL AMOUNT OF DISTRIBUTION O&M EXPENSE AND CAPITAL EXPENDITURES FOR THE BASE PERIOD?

A. Total distribution O&M expenditures for the Base Period were approximately $98 million, including $7 million in TDSIC expenditures. Total capital expenditures for the Base Period in the distribution system totaled approximately $403 million, including $106 million in TDSIC expenditures.

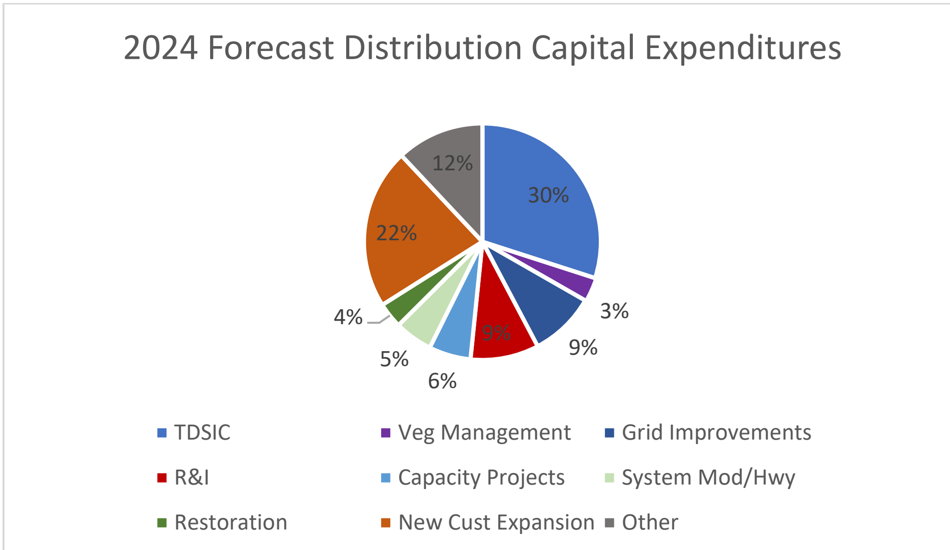
1 **<u>Chart 1</u>**



2 **Q. WHAT IS DUKE ENERGY INDIANA'S FORECASTED AMOUNT OF**
3 **DISTRIBUTION O&M EXPENSE AND CAPITAL EXPENDITURES IN 2024?**

4 A. Duke Energy Indiana forecasts approximately $117 million in O&M distribution expense in
5 2024, including $14 million in TDSIC expenditures. Total capital investment in the
6 distribution system is projected at approximately $376 million in 2024, including $114
7 million in TDSIC expenditures. The figure below provides a breakdown of Duke Energy
8 Indiana's 2024 distribution related capital expenditures.

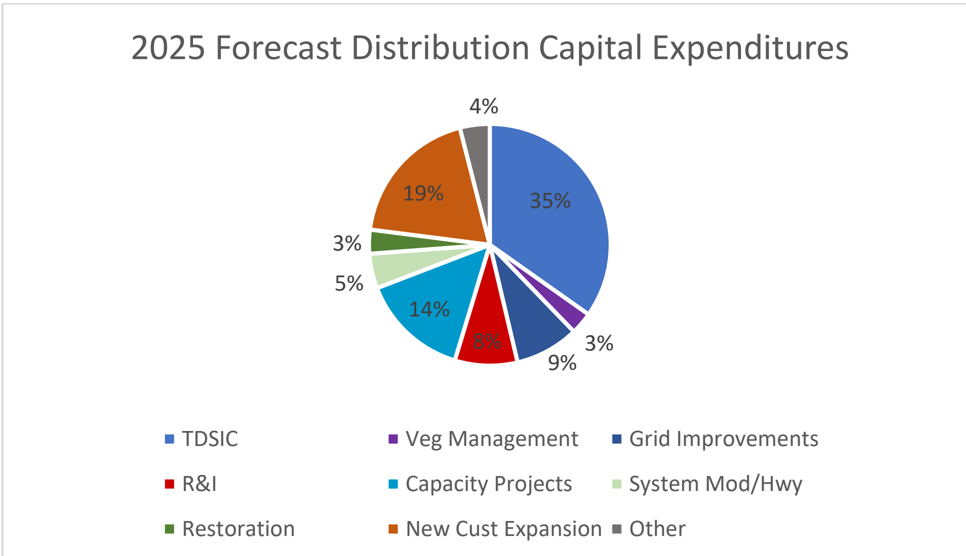
<u>Chart 2</u>



Q. WHAT IS DUKE ENERGY INDIANA'S FORECASTED AMOUNT OF DISTRIBUTION O&M EXPENSE AND CAPITAL EXPENDITURES IN 2025 (THE FORWARD-LOOKING TEST PERIOD)?

A. Duke Energy Indiana projects approximately $119 million in O&M distribution expense in 2025, including $15 million in TDSIC expenditures. Total capital investment in the distribution system is projected at approximately $420 million in 2025, including $146 million in TDSIC expenditures. The figure below provides a breakdown of Duke Energy Indiana's 2025 distribution related capital expenditures.

Chart 3



Q. PLEASE EXPLAIN HOW DUKE ENERGY INDIANA'S DISTRIBUTION O&M EXPENSE AND CAPITAL EXPENDITURES HAVE CHANGED FROM THE BASE PERIOD TO THE 2024 FORECAST AND 2025 FORECAST.

A. Distribution O&M budget target levels have remained relatively flat over the past few years. O&M variances (see Table 5) from year to year are typically driven by larger events in a given year or due to program initiatives.

Table 5 below includes Base Period actuals and forecasted Distribution spend for 2024 and 2025. From the Base Period to the 2024 Forecast, O&M is forecasted to increase by approximately $19 million due to lower TDSIC deferrals and increased vegetation management. The TDSIC deferral is discussed in greater detail in witness Ms. Suzanne Sieferman's testimony. The forecast for 2024 to 2025 remains relatively flat with the key driver of the $2 million increase relating to increased vegetation management.

Table 5

$ in Millions	Base Period	2024 F	2025 F
Distribution O&M	$98	$117	$119
Increase / (Decrease)		$19	$2

As can be seen in Table 6 below, there is a $27 million decrease in capital expenditures between the Base Period and the 2024 Forecast. The main driver of the difference between the Base Period and the 2024 Forecast was that the 2024 Forecast was based on a lower number of additions than seen in the Base Period. 2025 forecasted expenditures are expected to increase from the 2024 forecast by $44M. Key drivers of this change are primarily due to increases in TDSIC spend.

Table 6

$ in Millions	Base Period	2024 F	2025 F
Distribution Capital Expenditures	$403	$376	$420
Increase / (Decrease)		($27)	$44

Q. PLEASE BRIEFLY EXPLAIN ANY COST SAVING EFFORTS UNDERTAKEN TO MANAGE COSTS.

A. Duke Energy Indiana's 2024 Forecast includes cost reductions associated with multiple ongoing Distribution initiatives. While these efforts endure year over year and cost reductions continue, for 2024, the focus areas include automation and detection that reduces truck rolls, implementation of technology and data analytic enhancements, and inventory optimization improvements, among others.

Q. DID YOU PROVIDE THE 2025 DISTRIBUTION O&M AND CAPITAL EXPENDITURES REFLECTED ABOVE TO WITNESS MR. JOEL RUTLEDGE FOR INCLUSION IN THE DUKE ENERGY INDIANA FORECASTED TEST PERIOD PROPOSED IN THIS CASE?

A. Yes.

A. TDSIC

Q. WHAT IS TDSIC?

A. TDSIC is an acronym that stands for Transmission Distribution and Storage System Improvement Charge, which is a legislatively enacted recovery mechanism codified in Indiana Code ch. 8-1-39.

Q. DOES DUKE ENERGY INDIANA HAVE AN APPROVED TDSIC PLAN?

A. Yes. Duke Energy Indiana's TDSIC Plans were approved in 2016 in IURC Cause No. 44720 covering the period 2016-2022 and approved in 2022 in IURC Cause No. 45647 covering the period 2023-2028.

Q. HOW MUCH OF DUKE ENERGY INDIANA'S DISTRIBUTION CAPITAL EXPENDITURES ARE RELATED TO ITS TDSIC PLAN?

A. The amount of Duke Energy Indiana's distribution capital expenditures related to TDSIC is approximately $106 million in the Base Period, $114 million in the 2024 Forecast, and $146 million in the 2025 Forecast. Please see Confidential Attachment 23-A (HM) for support for TDSIC investments.

Q. WHAT ARE THE OBJECTIVES OF THE DISTRIBUTION TDSIC PLAN?

A. Duke Energy Indiana's plan addresses our defined grid investment planning objectives and supports the Five Pillars' attributes of reliability, resiliency, and stability, including the following areas of investment prioritization:

- Improve reliability for Indiana customers
- Advance grid hardening and resiliency
- Enable expansion of renewable and distributed generation
- Facilitate economic development growth

Q. WHAT PROGRAM CATEGORIES ARE INCLUDED IN DUKE ENERGY INDIANA'S DISTRIBUTION TDSIC INVESTMENT PLAN?

A. The TDSIC 2.0 Investment Plan's six program categories are:

Circuit Backbone Uplift - targets circuit enhancements to support circuit modernization, including automation, segmentation, and controlling circuit operations to enable self-optimization. These modernization investments reduce outage impacts with respect to their occurrence frequency, grid impact footprint, recovery time, and cost.

Overhead Lateral Uplift - is aimed at improving the lateral grid's reliability and resiliency. This program is primarily comprised of projects that add segmentation and automation of the circuit laterals to reduce the number of outages and customers impacted as well as reducing the duration of the outages themselves.

Underground System Uplift – targets cable rehabilitation for improved reliability.

4kV Conversions - consists of the conversion of risk-prone, legacy standard, and dated architecture of lower operating voltage lines to a 12 kV system.

Inspection Based Programs - is a condition-based program geared towards proactively replacing grid hardware and equipment based on their effective age and historical failure rates.

At a high level, these categories are focused on system capacity and technology designed to isolate faults and automatically reconfigure the system to reduce and shorten customer outages. In addition, these programs involve upgrading equipment to address the leading cause of outages, momentary interruptions, and enhancing controls around distribution lines and substation equipment to optimize power delivery to customers.

Distribution Substation Hardening and Resiliency Program – is a program which Transmission manages and involves distribution FERC substation assets. Please see witness Abbott's testimony for more details.

B. OTHER INVESTMENTS (OUTSIDE OF TDSIC)

Q. HOW MUCH OF DUKE ENERGY INDIANA'S DISTRIBUTION CAPITAL EXPENDITURES ARE RELATED TO NON-TDSIC INVESTMENTS?

A. The amount of Duke Energy Indiana's distribution capital expenditures related to non-TDSIC investments is approximately $297 million in the Base Period, $262 million in the 2024 Forecast, and $274 million in the 2025 Forecast. Please see Attachment 23-B (HM) for support for non-TDSIC Base Period and forecasted capital expenditures.

Q. PLEASE DESCRIBE THE NON-TDSIC INVESTMENTS AND HOW THEY DIFFER FROM THOSE INCLUDED IN EITHER THE TDSIC OR TDSIC 2.0 PLAN.

A. The non-TDSIC investments are more reactive, and they support mainly emergent equipment conditions, customer load growth and expansion, outage restoration, vegetation management, and system modifications and highway projects. Each of the investments identified in the TDSIC or TDSIC 2.0 Plan are more proactive for the purpose of safety, reliability, or system modernization.

The non-TDSIC investments include categories such as Reliability and Integrity, Capacity, New Customer Expansion and Storm Restoration and are described below.

Q. PLEASE SUMMARIZE THE COMPANY'S RELIABILITY AND INTEGRITY (R&I) PROGRAMS AND INVESTMENTS REFLECTED IN THE 2024 CAPITAL FORECAST AND FORWARD-LOOKING TEST PERIOD.

A. The various R&I programs are completed in response to emergent equipment conditions. Some examples of R&I programs are described below.

Cable replacement. Investments in this program include approximately $12M for the 2024 Forecast and $12M for the 2025 Forecast. This program replaces medium voltage underground cable that has failed or reached the end of its useful life. Underground cable installation, started in the 1970s and in the 1980s, became the default installation method for most residential customer connects supporting residential neighborhoods and subdivisions. Duke Energy Indiana currently has an estimated 10,025 miles of underground cable installed. Cable technology has improved through the years and life expectancy continues to increase.

Cable technology used during the 1970s was non-jacketed, concentric neutral using high molecular weight insulation. This cable is now beyond its anticipated life span and experiences increased failure rates and needs replaced.

Reactive Pole Replacement. Investments in this program include approximately $4M for the 2024 Forecast and $4M for the 2025 Forecast. Replacement of damaged or decayed distribution poles typically "found in the field" by Operations or engineering not associated with an outage, public damage, or pole inspection.

Substation Asset Upgrades. Investments in this program include approximately $6M for the 2024 Forecast and $4M for the 2025 Forecast. These distribution FERC projects are managed by Transmission and include the replacement of obsolete and/or failed or failing substation equipment. Asset replacements could include transformers, circuit breakers, relays, switches, and other miscellaneous station equipment.

Q. WHAT ARE THE DRIVERS OF THE COMPANY'S R&I PROGRAMS?

A. The drivers for R&I Programs are replacement of failed equipment, and equipment that has reached the end of its useful life.

Q. WHAT ARE THE BENEFITS OF THE R&I PROGRAMS?

A. Duke Energy Indiana's R&I Programs maintain assets and the reliability of the system.

Q. PLEASE DISCUSS WHAT TYPE OF CAPACITY PROJECTS ARE REFLECTED IN THE COMPANY'S O&M EXPENSES AND CAPITAL EXPENDITURES FOR THE 2024 CAPITAL FORECAST AND FORWARD-LOOKING TEST PERIOD, AS WELL AS THE DRIVERS FOR THESE PROJECTS.

A. The Company executes two types of capacity projects: projects that will enable the power distribution system to deliver more power to customers, and projects that improve the reliability and quality of the voltage that is supplied. The current infrastructure was designed with a limited capacity to distribute power. This capacity was based on the cost of construction at the time and the amount of power needed to supply customers. Aside from addressing capacity concerns, the Company maintains reliable system performance by executing projects that provide alternate sources to supply customers. This operating philosophy improves reliability by establishing backup sources for customers, in the event a primary source is out of service. Finally, physical characteristics of the distribution system can cause the quality of voltage delivered to the customer to be less than optimal to operate their equipment. In these cases, the company executes projects to modify the distribution system to ensure the power supply meets the needs of customers' equipment.

Q. WHAT ARE THE PLANNED INVESTMENTS, WORK SCOPES AND TIMING RELATED TO CAPACITY OF THE DISTRIBUTION SYSTEM?

A. Investments in capacity projects include approximately $22 million for the 2024 Forecast and $61 million for the 2025 Forecast. System capacity projects are developed for both actual load growth and projected load growth. Projects that are developed to expand the capacity of the distribution system include the addition of substations, addition of transformers in existing substations, extension of new circuits, and the replacement of existing circuits with larger wires. From conception through execution, the timing of these projects range from one to five years. After engineers develop scoping documents, designers collaborate to ensure all necessary components are integrated into the design to meet customer needs and system operational needs. Aside from load growth projects that result from collaboration with the Company's Large Account Management and Economic Development organizations, planning engineers review system peak load data (summer and winter) looking for overloaded infrastructure/equipment or projected overloading due to impending load growth. Load projections are made using historical data and growth rates. There are times when large customers do not provide long-term plans for growth, which drives Duke Energy Indiana's need to execute short-term projects.

Capacity projects are initiated with in-service dates that ensure the necessary capacity will be in-service to meet imminent load growth. These projects usually transition from scope development to completion within 18-24 months. Whereas longer range projects result from forecasted growth trends.

Q. WHAT ARE THE WORK SCOPES AND TIMING OF THE COMPANY'S CAPACITY PROJECTS RELATED TO RELIABILITY AND POWER QUALITY OF THE DISTRIBUTION SYSTEM?

A. Some system capacity projects enable the transfer of customers' supply between sources, thereby enabling faster restoration of service when a customer's primary source is unavailable. The system voltage must remain at the level necessary to operate customers' equipment. This can be accomplished by increasing the size of the circuit. Duke Energy Indiana's planning engineers analyze the system for proper voltage, reliability improvement opportunities, and system protection conditions resulting from system loading. The system reliability improvement aspect of the planning engineer's work involves evaluating the system for optimal protective device installation and coordination, then developing projects that are designed to improve reliability. If the voltage delivered to the customer is incapable of operating the customer's equipment, planning engineers develop projects to mitigate the system issues. These projects include replacing distribution circuits, transferring load between the three phases of a circuit, transferring load between circuits, and adding voltage regulation devices. Considering the customer satisfaction impact, these projects are typically scheduled to be executed within two years.

Q. PLEASE EXPLAIN THE NEED FOR CAPACITY PROJECT EXPENDITURES.

A. In 2024 and 2025, the Company will be completing several substation and circuit upgrades projects. Substation projects include the addition of new substations and/or the addition of transformers in existing substations. This is necessary to prevent the overloading of transformers when new customer load is added to the distribution system. Distribution circuit projects include extending new circuits or increasing the size of existing circuits. New or larger circuits are necessary to supply new load or prevent the overloading of existing circuits. Table 7 includes some of the customer addition projects underway in 2024 and currently projected for 2025.

Table 7

2024 Capacity Projects	2025 Capacity Projects
Plainfield West Add Circuit	Avon Industrial Park
Camp Atterbury Line Extension	Plainfield South Add Three Circuits
Kokomo Industrial South	River Ridge Gateway

Fishers North Bank 1 & 2 Replacement	Westfield NE Transformer and Line Additions
Fishers Olio Rd Line Extension	Wabash Industrial Temporary Feed
Geist Transformer Addition	Greenwood Averitt Rd Line Extension
North Vernon West Transformer and Line Addition	Brownsburg North Transformer Addition
Shelbyville Northridge Transformer and Line Addition	Whitesville Line Extension
Terre Haute Margaret Ave Transformer Addition	Kokomo Industrial Line Additions

Q. HOW DOES THE COMPANY PRIORITIZE ITS CAPACITY PROJECTS?

A. To ensure the most viable and cost-efficient distribution projects are funded each year, a project prioritization matrix has been developed. The intent of this matrix is to maximize the use of objective data while minimizing subjective data. The matrix uses loading criteria and reliability data for an overall project ranking.

The following considerations are used in determining project priority:

- Percent Loading of Transformer
- Percent Loading of Feeder
- Estimated Unserved Load
- Growth Rate

Other factors such as regulatory requirements and management discretion are also considered on a case-by-case basis.

Q. WHAT ARE THE BENEFITS OF THE PLANNED CAPACITY PROJECTS?

A. Capacity projects can benefit both the ability to supply load and the quality of the supply. As it relates to system capacity, these projects provide the ability to supply new load. If projects that are designed to supply new load are not completed, we may not be able to supply new customers. In some cases, capacity projects provide a secondary supply to existing load. Secondary supplies provide backup sources for customers. These backup sources enable load transfers for maintenance purposes and expedite restoration during system faults. Finally, capacity projects could be designed to eliminate power quality issues caused by low voltage. Eliminating low system voltage permits customers' equipment to operate as designed.

Q. ARE THERE ANY ALTERNATIVES TO THE COMPANY'S CAPACITY PROJECTS?

A. Capacity projects must be completed to supply customer load and ensure the quality of service is acceptable. These projects provide the ability to supply new load. If projects that are designed to supply new load are not completed, the Company might not be able to supply new customers. If capacity projects that are designed to provide a secondary supply to existing load are delayed, the Company might not be able to transfer load to another source for maintenance purposes. Failure to complete these projects could also increase the time needed to restore service during system faults. If capacity projects that are designed to eliminate power quality issues are not completed, customers could experience low voltage that possibly disables their equipment. During the project scoping phase, planning engineers vet alternatives. They seek to resolve system capacity and reliability concerns by implementing the most viable, cost-efficient solutions. Generally, alternative solutions are either impractical, less economical, or both.

Q. PLEASE EXPLAIN THE TYPE OF PROJECTS THAT ARE CLASSIFIED AS NEW CUSTOMER EXPANSION.

A. Customer expansion projects for Duke Energy Indiana can be separated into four basic categories:

1) Extensions of the Duke Energy Indiana distribution system to serve an individual residential single-family home.

2) Extensions of the Duke Energy Indiana distribution system to serve subdivisions or multi-family buildings.

3) Extension of the Duke Energy Indiana distribution system to serve Commercial or Industrial businesses or companies.

4) Customer-requested relocations of existing Duke Energy Indiana distribution facilities to accommodate new customer facilities on a lot/parcel.

Q. WHAT IS THE PLANNED INVESTMENT, WORK SCOPE, AND TIMING OF THE NEW CUSTOMER EXPANSION PROJECTS RELATED TO THE DISTRIBUTION SYSTEM?

A. Investments in New Customer Expansion projects include approximately $82M for 2024 Forecast and $80M for 2025 Forecast. The scope and timing for a customer expansion project is driven by the customer's projected load requirements, the existing Duke distribution system nearest the project, and the customer's requested in-service dates.

For residential single-family homes, the scope is typically the extension of overhead or underground primary conductors, poles, with the installation of a single-phase transformer. These projects typically take two to three months to complete, depending on the complexity of the line extension.

The scope of a subdivision project typically includes an extension of overhead primary distribution conductors and poles to get to the subdivision entrance. From there it includes the extension of underground primary conductors, pad-mounted transformer and sectionalizing module installations, secondary conductors, and service lateral installations. Depending on the number of lots in the subdivision, there could be a need for multiple distribution phases to be extended throughout the development. Timing for the average typical subdivision today is around 4 months.

Commercial and Industrial project scope is driven by customer load more so than your typical residential installations. The customer's load requirements or requests could lead to the installation of a customer substation and/or primary distribution service. Large commercial developments also require capacity and planning discussions and typically involve extensions or upsizing of the existing distribution system. Once plans are finalized, these projects could take 12 months or more to complete based on the complexity of the development.

Customer-requested relocation project scopes are driven by the length of the distribution system that needs relocated and the distribution feeder routing. These projects can require the interconnection of multiple distribution feeders, and the upgrading of existing feeder conductors to handle load growth/swap to the feeder. These projects require completion prior to the customer being able to start construction and the timing varies greatly depending on the size of the customer's development.

Q. HOW DOES THE COMPANY PRIORITIZE ITS NEW CUSTOMER EXPANSION PROJECTS?

A. Duke Energy Indiana works with its customers to prioritize new customer expansion projects based on the customer's requested need and timing.

Q. PLEASE DESCRIBE HOW THE COMPANY PREPARES FOR STORM RESTORATION ACTIVITIES.

A. Duke Energy has a full-time Emergency Preparedness organization that is responsible for monitoring all significant threats to the provision of reliable electric service for our customers. These teams work closely with the Duke Energy Meteorology team to monitor weather threats and are alerted multiple days in advance of severe weather as predicted by the National Weather Service. The Company's Meteorology Department provides insight into the timing, impact severity, and location of any severe weather threat and this information is used to classify each storm. Duke Energy Indiana has four classifications, or severity levels, used to determine the level of activation and support personnel required for a storm or natural disaster.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF EACH LEVEL.

A. Level 0 (non-declared): Storms or events that affect or could affect only one part of the service territory with minor isolated damage. Restoration is normally accomplished by the affected area's resources without outside assistance and typically within 6 hours.

Level 1 (declared): Storms or events with minor damage affecting one or a few Operations areas. Restoration is normally accomplished by the affected area's resources without outside assistance and typically between 6-12 hours.

Level 2 (declared): Storms or events causing damage to one or several Operations areas. Restoration efforts require the movement of line resources, including possible off-system contractors, to the affected areas. Restoration will typically take between 12 and 24 hours.

Level 3 (declared): Storms or events producing extensive damage to the service territory. Restoration efforts require management of large compliments of off-system crews, as well as extensive materials, logistics, and engineering support. Restoration will take more than 24 hours.

Q. HOW OFTEN DOES DUKE ENERGY INDIANA EXPERIENCE LEVEL 1, 2, AND 3 STORMS?

A. The table below summarizes storm activity since 2019.

Table 8

Storm Level	2019	2020	2021	2022	2023
Level 1	6	5	5	8	6
Level 2	8	3	1	2	4
Level 3	0	1	1	1	2
Number of MEDs	9	6	4	3	11

Q. HOW DOES DUKE ENERGY INDIANA DETERMINE IF A STORM QUALIFIES AS A MAJOR EVENT DAY ("MED") STORM?

A. An MED is defined by IEEE 1366 as a day in which the daily system SAIDI exceeds an MED threshold value (calculated from a 5-year average daily SAIDI). MEDs should be analyzed and reported separately.

Q. HISTORICALLY WHAT LEVEL OF ANNUAL O&M EXPENSE HAS DUKE ENERGY INDIANA INCURRED FOR MED STORMS?

A. Our actual expenditures will vary year to year based on the actual number of MED storms and the types of restoration required. Over the past 5 years (2019-2023) our MED storm expenses were as follows ($ in Millions):

Table 9

Year	Distribution	Transmission	Total
2019	$14.7	$0.5	$15.2
2020	$9.0	$1.0	$10.0
2021	$6.4	$0.3	$6.7
2022	$4.8	$0.1	$4.9
2023	$40.0	$1.4	$41.4
5 Year Average	$15.0	$0.7	$15.6

Q. WHAT LEVEL OF ANNUAL O&M EXPENSE IS DUKE ENERGY INDIANA FORECASTING FOR 2024 AND 2025 FOR MED STORMS?

A. For 2024 and 2025, the Company is forecasting annual O&M expense of $12.7 million. However, as described in more detail in Ms. Sieferman's testimony, the Company is proposing a *pro forma* adjustment to increase this amount from $12.7 million to $15.6 million, based on the five-year historical average of such costs as shown in Table 9.

VI. <u>VEGETATION MANAGEMENT PROGRAM</u>

Q. PLEASE SUMMARIZE THE COMPANY'S DISTRIBUTION VEGETATION MANAGEMENT PROGRAM AND BENEFITS.

A. The program includes both routine maintenance trimming along with identifying and cutting down hazard trees that can be located outside of the Company's right-of-way but still impact the system, particularly in times of extreme weather. The Company's reliability metrics, as they pertain to the distribution system, have improved with the increased routine maintenance trimming and Hazard Tree Program which focused on ash trees. Duke Energy Indiana anticipates that maintaining a vegetation management program, at the level proposed in the forward-looking test period, will support restoration efforts and reduce outage times.

Q. WHAT IS THE COMPANY'S PHILOSOPHY TOWARDS VEGETATION MANAGEMENT?

A. The Company's approach towards vegetation management is to focus on customer safety and reliability in a cost-effective manner while utilizing industry best management practices.

Duke Energy Indiana takes a proactive approach to its vegetation management program, which means we try to trim or remove trees and other vegetation that may cause problems before service is affected. Duke Energy Indiana's primary focus is to control the growth of incompatible vegetation along its electric lines. To control the growth around our distribution lines, we hire qualified personnel to monitor the condition of vegetation over, under, and adjacent to our electric facilities. The Company also utilizes various vegetation control practices to reduce, manage, or eliminate incompatible growth, such as the use of herbicides and mowing. The Company is performing routine maintenance on an average five-year trim cycle or twenty percent of the overhead primary miles annually.

The Company's philosophy is that the consistent implementation of industry accepted vegetation management practices reduces the likelihood of tree and power line conflicts, as well as service interruptions, and allows for the full utilization of the operating system. Work is performed in conformance with Indiana Utility Regulatory Commission rules, OSHA regulations, American National Standards Institute ("ANSI") A300, ANSI Z133, Tree Care Industry Association's (formerly the National Arborist Association) standards, Dr. Shigo's *Field Guide for Qualified Line Clearance Tree Workers*, National Electrical Safety Code, International Society of Arboriculture Best Management Practices, and all federal, state, county, and municipal laws, statutes, ordinances, and regulations applicable to said work.

19.41% of all distribution-related outages were due to vegetation interference in 2023. Duke Energy Indiana knows that a strong vegetation management program is a key component to meet system reliability.

Q. BEYOND ROUTINE VEGETATION MANAGEMENT, WHAT OTHER ACTIVITIES IS DUKE ENERGY INDIANA ENGAGED IN TO ENSURE SYSTEM RELIABILITY?

A. To maintain safety and reliability, Duke Energy Indiana has a Hazard Tree Program that is designed to remove trees that pose potential danger to our distribution system. This program focuses on cutting down trees that are dead, structurally unsound, dying, diseased, leaning or otherwise defective that could strike electrical lines or equipment.

Q. WHAT IS DUKE ENERGY INDIANA'S ANNUAL ROUTINE MAINTENANCE TRIM CYCLE FOR ITS DISTRIBUTION SYSTEM?

A. The Company is performing routine maintenance on approximately twenty percent of the overhead primary mileage annually.

Q. AS PART OF ITS ROUTINE MAINTENANCE SCHEDULE, DESCRIBE THE RELIABILITY, SAFETY, AND OTHER CRITERIA USED IN DETERMINING WHETHER TREES AND VEGETATION REQUIRE TRIMMING.

A. Duke Energy Indiana has an integrated vegetation management program in which the Company uses foresters who are certified by the International Society of Arboriculture ("ISA") to provide guidance and oversight to contractors who are pruning trees and clearing brush growth around, over, and under power lines. In addition to the routine trim cycle, we perform periodic visual inspections to determine whether the Company's targeted 10 feet of clearance is maintained or requires additional attention in advance of the schedule. During routine vegetation maintenance, our employees and contractors also identify hazard trees that pose a risk and remove the affected trees once permissions are received. As previously discussed, our Hazard Tree Removal Program is another component of our integrated vegetation management plan.

Q. PLEASE SUMMARIZE THE TOTAL O&M SPEND FOR DUKE ENERGY INDIANA'S VEGETATION MANAGEMENT PROGRAM FOR THE PAST SEVEN YEARS AND THE MILES TRIMMED FOR EACH OF THOSE YEARS. PLEASE ALSO SUMMARIZE WHAT IS FORECASTED TO BE SPENT IN 2024 AND 2025.

A. The table below shows the amount of O&M spend and miles trimmed on the distribution system for the Company's routine vegetation management activities from 2017-2023 (including Base Period) and what is forecasted for 2024-2025:

<u>Table 10</u>:

	2017 Actuals	**2018 Actuals**	**2019 Actuals**	**2020 Actuals**	**2021 Actuals**	**2022 Actuals**	**Base Period**	**2023 Actual**	**2024 Forecast**	**2025 Forecast**
Miles	1,009.45	1,008.59	956.98	2,795.29	3,314.38	3,197.84	3,406.53	3,389.44	3,411	3,234
O&M Total Spend	$9.8M	$14.3M	$14.1M	$31.16M	$40.62M	$40.74M	$41.55M	$42.45M	$44.76M	$44.8M
Total Cost Per Mile	$9,708	$14,178	$ 14,731	$11,147	$12,255	$12,740	$12,196	$12,525	$13,124	$13,852

Q. PLEASE EXPLAIN THE CHALLENGES THAT DUKE ENERGY INDIANA HAS ENCOUNTERED WITH CONTRACTORS OVER THE PAST FEW YEARS.

A. The market for qualified resources eligible to properly engage in vegetation management activities remains constricted and very competitive. Even with competitive bid events, costs for vegetation management services continue to increase.

Q. PLEASE DESCRIBE THE HAZARD TREE REMOVAL PROGRAM.

A. Because about twenty percent of all distribution-related outages were due to vegetation interference in 2023, Duke Energy Indiana continues to remove hazard trees that are likely to cause a problem with Duke Energy Indiana's distribution system from outside the Company's right of way. The Company continues to address living trees that are diseased as well as dead trees that have the potential to impact Duke Energy Indiana's assets.

In the beginning of 2019, Company personnel developed a workplan that targeted high risk trees using spatial identification technologies. Company personnel worked with contractors to prioritize removal of hazard and ash trees by potential customer impact and highest threats to reliability. Over the last five years between 2019 and 2023, Duke Energy Indiana removed approximately 125,000 trees that were outside of our right of way. Hazard Tree work will continue for the foreseeable future.

There are two components to the Hazard Tree Program. First, when our contractors are performing routine maintenance, they are instructed to look outside the ten-foot clearance zone. If they identify trees that pose a threat to our distribution lines, we will work with our customers to remove the tree.

The second component of this initiative occurs outside of routine maintenance trimming. The Company utilizes "Hazard Tree Identifiers" whose sole job is to conduct visual inspections and identify hazard trees that pose a threat to our facilities.

Q. WILL THIS BE AN ONGOING COMPONENT OF DUKE ENERGY INDIANA'S VEGETATION MANAGEMENT PROGRAM?

A. Yes, hazard tree identification and removal have been, and will continue to be, a component of our integrated vegetation management program.

Q. PLEASE SUMMARIZE DUKE ENERGY INDIANA'S PLANNED APPROACH TO VEGETATION MANAGEMENT FROM 2023-2025.

A. Duke Energy Indiana's plan includes performing routine maintenance on approximately twenty percent of the overhead primary miles annually and continued focus on Hazard tree removals.

Q. WHAT IS DUKE ENERGY INDIANA'S REQUEST IN TERMS OF DOLLARS TO PERFORM ROUTINE MAINTENANCE?

A. Currently, the Company is forecasted to spend approximately $44.8M of O&M in both 2024 and 2025 for routine vegetation management. As described in detail in Company witness Ms. Christa Graft's testimony, the Company is proposing to continue its reserve accounting approach for its distribution vegetation management O&M costs. Additionally, in 2024 and 2025 Duke Energy Indiana is forecasting to spend approximately $12.5 million annually in capital costs for its Hazard Tree Program.

VII. CONCLUSION

Q. WAS CONFIDENTIAL ATTACHMENT 23-A (HM) AND ATTACHMENT 23-B (HM) PREPARED BY YOU OR UNDER YOUR DIRECTION?

A. Yes.

Q. DOES THIS CONCLUDE YOUR PREFILED TESTIMONY?

A. Yes, it does.

Cause No. 46038

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: ______________________ Dated: April 4, 2024

Harley Mc Corkle

(in millions)

TDSIC 2 Program Categories *	Base Period	2024 Forecast	2025 Forecast
Circuit Backbone Reliability Uplift	$ 28.3	$ 24.3	$ 55.3
Overhead Lateral Reliability Uplift	$ 8.8	$ 19.8	$ 19.5
Underground System Uplift	$ 3.1	$ 5.6	$ 5.8
4 kv Conversion	$ 6.9	$ 7.7	$ 8.4
Inspection Based	$ 15.5	$ 27.8	$ 25.5
Substation Hardening & Resiliency	$ 10.3	$ 28.4	$ 31.8
Line Hardening & Resiliency	$ 3.4	$ -	$ -
TDSIC 1	$ 29.3	$ -	$ -
Grand Total	**$ 105.7**	**$ 113.7**	**$ 146.2**

*Dollars reported are Capex, whereas TDSIC filings are reported as In Service. Dollars reported are not reflective of updates submitted in the TDSIC-2 Plan Update filed in Oct 2023.

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2023 Material	2023 Labor	2023 Indirects	2023 AFUDC	2023 Total Capital Additions	2023 Project O&M	2023 Capital & O&M Total	2023 Retirements	2023 Total Project
1	4kV Conversion	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	Automated Lateral Device (ALD)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3	Capacitor Automation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4	Circuit Sectionalization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
5	Circuit Segmentation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
6	Circuit Visibility & Control	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
7	Declared Circuits	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
8	Deteriorated Conductor	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
9	General Switchgear	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
10	GLT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11	Inaccessible R/W	$0	$0	$0	$0	$0		$0		$0
12	Limited Access Road Crossing	$0	$0	$0	$0	$0		$0		$0
13	Recloser Replacement Program	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
14	SMEI	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
15	SOG - Circuit Connectivity	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
16	SOG - Recloser	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
17	Targeted Undergrounding (TUG)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
18	Underground Cable Rehabilitation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
19	IVVC									
20	IVVC Circuit Conditioning Capacitor	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
21	IVVC Circuit Conditioning Reconductor	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
22	IVVC Circuit Conditioning Regulator	$0	$0	$0	$0	$0		$0		$0
23	IVVC EOL Voltage Sensors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
24	IVVC Line Voltage Regulator Control Replacement	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
25		$20,818,109	$39,515,827	$19,804,414	$2,266,957	$82,405,306	$15,826,276	$98,231,582	$16,806,216	$115,037,798

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2024 Material	2024 Labor	2024 Indirects	2024 AFUDC	2024 Total Capital Additions	2024 Project O&M	2024 Capital & O&M Total	2024 Retirements	2024 Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation									
4	Circuit Sectionalization									
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W	$0	$0	$0	$0	$0		$0		$0
12	Limited Access Road Crossing	[redacted]								
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor	[redacted]								
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator	$0	$0	$0	$0	$0		$0		$0
23	IVVC EOL Voltage Sensors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
24	IVVC Line Voltage Regulator Control Replacement	$0	$0	$0	$0	$0		$0		$0
25		$24,298,220	$46,652,097	$21,518,029	$3,017,219	$95,485,564	$14,607,463	$110,093,028	$20,908,340	$131,001,368

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2025 Material	2025 Labor	2025 Indirects	2025 AFUDC	2025 Total Capital Additions	2025 Project O&M	2025 Capital & O&M Total	2025 Retirements	2025 Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation	$0	$0	$0	$0	$0		$0		$0
4	Circuit Sectionalization	[redacted]								
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W									
12	Limited Access Road Crossing									
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor									
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator									
23	IVVC EOL Voltage Sensors									
24	IVVC Line Voltage Regulator Control Replacement									
25		$29,860,855	$51,516,720	$25,572,474	$3,263,092	$110,213,140	$16,120,247	$126,333,387	$23,268,851	$149,602,239

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2026 Material	2026 Labor	2026 Indirects	2026 AFUDC	2026 Total Capital Additions	2026 Project O&M	2026 Capital & O&M Total	2026 Retirements	2026 Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation	$0	$0	$0	$0	$0		$0		$0
4	Circuit Sectionalization	[redacted]								
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W									
12	Limited Access Road Crossing									
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor	[redacted]								
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator									
23	IVVC EOL Voltage Sensors									
24	IVVC Line Voltage Regulator Control Replacement									
25		$35,880,787	$52,952,231	$30,206,326	$3,971,934	$123,011,278	$17,754,669	$140,765,947	$27,579,670	$168,345,617

Cause No. 46038

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2027 Material	2027 Labor	2027 Indirects	2027 AFUDC	2027 Total Capital Additions	2027 Project O&M	2027 Capital & O&M Total	2027 Retirements	2027 Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation	$0	$0	$0	$0	$0		$0		$0
4	Circuit Sectionalization	[redacted]								
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W	$0	$0	$0	$0	$0		$0		$0
12	Limited Access Road Crossing	[redacted]								
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor									
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator									
23	IVVC EOL Voltage Sensors									
24	IVVC Line Voltage Regulator Control Replacement									
25		$35,022,655	$58,135,166	$32,555,683	$4,261,529	$129,975,034	$19,513,025	$149,488,058	$32,130,399	$181,618,458

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	2028 Material	2028 Labor	2028 Indirects	2028 AFUDC	2028 Total Capital Additions	2028 Project O&M	2028 Capital & O&M Total	2028 Retirements	2028 Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation	$0	$0	$0	$0	$0		$0		$0
4	Circuit Sectionalization	[redacted]								
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W									
12	Limited Access Road Crossing									
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor									
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator									
23	IVVC EOL Voltage Sensors									
24	IVVC Line Voltage Regulator Control Replacement									
25		$40,150,414	$63,168,349	$36,139,148	$4,729,110	$144,187,021	$21,464,276	$165,651,297	$35,573,960	$201,225,256

Duke Energy Indiana - T & D Infrastructure Improvement Plan, Distribution System Capital Improvements

Line No.	Distribution Circuit Upgrade Projects	6 Year Total Material	6 Year Total Labor	6 Year Total Indirects	6 Year Total AFUDC	6 Year Total Capital Additions	6 Year Total Project O&M	6 Year Total Capital & O&M Total	6 Year Total Retirements	6 Year Total Project
1	4kV Conversion	[redacted]								
2	Automated Lateral Device (ALD)									
3	Capacitor Automation									
4	Circuit Sectionalization									
5	Circuit Segmentation									
6	Circuit Visibility & Control									
7	Declared Circuits									
8	Deteriorated Conductor									
9	General Switchgear									
10	GLT									
11	Inaccessible R/W									
12	Limited Access Road Crossing									
13	Recloser Replacement Program									
14	SMEI									
15	SOG - Circuit Connectivity									
16	SOG - Recloser									
17	Targeted Undergrounding (TUG)									
18	Underground Cable Rehabilitation									
19	IVVC									
20	IVVC Circuit Conditioning Capacitor									
21	IVVC Circuit Conditioning Reconductor									
22	IVVC Circuit Conditioning Regulator									
23	IVVC EOL Voltage Sensors									
24	IVVC Line Voltage Regulator Control Replacement									
25		$186,031,040	$311,940,390	$165,796,073	$21,509,841	$685,277,343	$105,285,956	$790,563,299	$156,267,436	$946,830,735

Pie Chart Category	Base Period	2024 Forecast	2025 Forecast
TDSIC	105,669,327	113,670,152	146,229,621
Veg Management	15,593,236	12,449,260	12,496,890
Grid Improvements	2,950,631	33,544,772	35,520,895
R&I	53,928,358	35,127,156	35,211,451
Capacity Projects	59,997,392	21,548,737	60,862,026
System Mod/Hwy	30,967,157	19,538,880	19,531,781
Restoration	28,656,170	13,167,541	13,496,730
New Cust Expansion	99,571,022	82,406,611	79,955,715
Other	5,591,360	44,541,180	16,663,850
Grand Total	**402,924,653**	**375,994,290**	**419,968,960**

R&I Category	Base Period	2024 Forecast	2025 Forecast
Cable Replacement	13,552,258	11,879,484	12,265,868
Switchgear Replacement	790,554	959,132	963,908
Recloser Replacement	743,738	1,215,000	1,251,450
Capacitor Replacement	2,494,744	2,013,000	2,028,390
Reactive Pole Replacement	5,137,420	3,710,000	3,821,300
Transformer Replacement	2,247,603	1,550,000	3,052,700
Substation Asset Upgrades	14,534,848	5,743,000	3,587,000
Other	14,427,193	8,057,540	8,240,835
Grand Total	**53,928,358**	**35,127,156**	**35,211,451**