I&M Exhibit: _____

Cause No. 45235

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

DAVID S. ISAACSON

INDEX

PRE-FILED VERIFIED DIRECT TESTIMONY OF DAVID S. ISAACSON
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

Q. Please state your name and business address.

A. My name is David S. Isaacson. My business address is Indiana Michigan Power Center, P.O. Box 60, Fort Wayne, Indiana 46801.

Q. By whom are you employed and in what capacity?

A. I am employed by Indiana Michigan Power Company (I&M or Company) as Vice President of Distribution Operations.

Q. Please describe your educational and professional background.

A. I graduated from Michigan State University in 1985 with a Bachelor of Science Degree in Forestry Management and from Indiana Wesleyan University in 1993 with a Masters of Business Administration Degree. Beginning in 1986, I worked at I&M in the Forestry Department and in asset utilization. In 2001, I joined Spectrum Engineering as the Director of Business Operations. In 2007, I returned to I&M and progressed through positions of increasing responsibility, including Region Forestry Supervisor, Distribution System Manager for I&M's Muncie district, and Region Support Manager. In 2013, I became I&M's Distribution Dispatch Manager and was responsible for the operation of I&M's electrical distribution grid. In 2014, I became Distribution Projects Manager and in 2016 was promoted to Director of Distribution Risk and Project Management; in these positions I was responsible for all phases of I&M's distribution projects, including planning, design, engineering, procurement, and construction. I was promoted to my current position in 2019.

Q. What are your responsibilities as Vice President of Distribution Operations?

A. I am responsible for overseeing the planning, construction, operation, and maintenance of I&M's distribution system. My duties include the safe and reliable delivery of service to our customers, the oversight and management of service extension to new customers, and the restoration of service when outages occur. My responsibilities also include overseeing I&M's distribution system reliability programs and vegetation management. I report directly to I&M's President.

Q. Have you previously submitted testimony in any regulatory proceedings?

A. Yes. I submitted testimony before the Indiana Utility Regulatory Commission (Commission) in Cause No. 43663 and in Cause No. 44542.

I. PURPOSE OF TESTIMONY

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

A. The purpose of my testimony is to provide an overview of the Company's distribution system and to support the Company's distribution planning and expenditures. I will begin by discussing the condition of I&M's distribution system and the metrics the Company uses to measure the reliability of its distribution system. I will then present the Company's Distribution Management Plan (Plan), a comprehensive, forward-looking capital and operations plan under which the Company is making significant investments to maintain and improve the reliability of its distribution system, to enhance public safety, and to leverage technology to benefit the grid. In particular, I will describe and support I&M's planned deployment of advanced meter infrastructure (AMI) in its Indiana service territory. I will then summarize and support the level of distribution operation and maintenance (O&M)

expenses during the historical base period from January 1, 2018 through December 31, 2018, and the projected level of distribution O&M expenses during the forward-looking test period of January 1, 2020 through December 31, 2020 (Test Year). I also support forecasted distribution capital investment from January 1, 2019 through December 31, 2020 (Capital Forecast Period).

Q. Are you sponsoring any attachments in this proceeding?

A. I am sponsoring the following attachments:

- Attachment DSI-1: I&M's Distribution Management Plan (2019-2020)
- Attachment DSI-2: Distribution Management Plan Major Project Summary
- Attachment DSI-3: I&M Indiana Service Territory Map with Locations of Select Distribution Management Plan Programs and Projects

Q. Were the attachments that you are sponsoring prepared or assembled by you or under your direction?

A. Yes.

II. DISTRIBUTION SYSTEM CONDITIONS

Q. Please provide an overview of I&M's distribution system in Indiana.

A. I&M serves approximately 468,000 customers in eastern and central Indiana in a service area that covers approximately 3,200 square miles and includes 118 cities and communities and 24 counties. I&M's Indiana distribution system includes approximately 210 substations, 15,100 miles of distribution lines consisting of 12,100 miles of overhead line primarily supported on wood poles, and 3,000 miles of underground cable. I&M serves four Indiana cities via underground networks – Fort Wayne, Muncie, Elkhart, and South Bend.

Q. How would you generally characterize I&M's existing distribution assets?

A. I&M's Indiana service territory continues to experience operating challenges related to aging assets. Much of I&M's system was built in the 1960s and 1970s, when I&M's territory experienced growth. An increasing portion of assets are now reaching the end of their expected design lives. Although age alone does not determine when assets fail, assets are more likely to fail when they reach the end of their design life, and older assets can be harder to replace when they fail because it is often difficult to obtain available parts for aging equipment. Older assets also pose safety risks from failures during operation.

Q. What is the condition of vegetation on I&M's distribution system?

A. Vegetation remains a principal cause of outages in I&M's service territory. Trees are growing too close to wires on approximately 19% of I&M's overhead system. This is a significant improvement from I&M's last rate case, when trees were growing too close to wires on approximately 30% of I&M's system.[1] But substantial vegetation management must continue to further reduce tree-related outages. Similarly, continuing on our current course of establishing a systematic four-year maintenance cycle will further improve reliability and provide reasonable assurance that preventable vegetation-caused outages will be kept under control.

III. RELIABILITY METRICS AND SYSTEM GOALS

Q. How does the Company measure the reliability of its distribution system?

A. I&M primarily uses the System Average Interruption Duration Index (SAIDI), the System Average Interruption Frequency Index (SAIFI), and the Customer Average

[1] See Cause No. 44967, Direct Testimony of Thomas Kratt at 6.

Interruption Duration Index (CAIDI) to gauge service reliability. These indices are used across the electric utility industry. The Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-2012 describes SAIDI, SAIFI, and CAIDI as follows:

- SAIDI indicates the time the average customer is without service due to sustained interruptions. It is total Customer Minutes of Interruption (CMI) divided by the number of customers served.
- SAIFI indicates how often the average customer experiences a sustained interruption. It is the total number of customers interrupted divided by the number of customers served.
- CAIDI represents the average time required to restore service. It is total CMI divided by the number of customers interrupted.

Q. Please summarize the Company's recent reliability performance in Indiana.

A. I&M strives to provide customers the best reliability it can with existing resources and system conditions. I&M is making substantial investments in its distribution system through its Distribution Management Plan, which I discuss below, and this has resulted in reliability improvement – meaning reliability has been better than it would have been without this substantial investment. I&M also recognizes its system challenges, especially related to vegetation and aging assets, which have resulted in I&M's overall reliability declining in recent years. I&M plans to continue to implement its Distribution Management Plan to address this declining reliability.

Figure DSI-1 provides I&M's reliability indices for the previous five years, which were included in I&M's Electric Reliability Report under 170 IAC 4-1-23(e):

Figure DSI-1
I&M Reliability Indices 2014-2018 (Indiana)

	Excludes Major Event Days						All Conditions					
	SAIDI		SAIFI		CAIDI		SAIDI		SAIFI		CAIDI	
Year	Annual	5 Yr Avg	Annual	5 Yr Avg	Annual	5 Yr Avg	Annual	5 Yr Avg	Annual	5 Yr Avg	Annual	5 Yr Avg
2014	127	129	0.77	0.83	165	156	306	480	0.96	1.08	318	423
2015	160	138	1.05	0.89	153	156	390	480	1.24	1.13	314	405
2016	153	138	0.95	0.88	161	157	255	479	1.06	1.12	241	407
2017	166	144	0.98	0.90	170	161	258	317	1.11	1.07	233	300
2018	176	157	1.10	0.97	160	162	263	294	1.28	1.13	206	262

Q. What are the primary causes of outages in I&M's Indiana service territory?

A. As shown on Figure DSI-2 below, vegetation and equipment failures are the main causes of outages in I&M's Indiana service territory. Vegetation is responsible for about 25% of SAIDI and 17% of SAIFI during the past five years, and equipment-related failures represent almost 22% of SAIDI and 24% of SAIFI.

Figure DSI-2
I&M's Principal Outage Causes in CMI (Indiana)

Interruption Cause	2014 CMI	2015 CMI	2016 CMI	2017 CMI	2018 CMI	Average CMI
Vegetation*	15,240,156	17,667,952	17,996,256	21,040,849	18,428,148	18,074,672
Equipment Failure	12,484,492	16,985,083	16,642,967	13,930,827	17,813,018	15,571,277
Station	7,951,160	9,675,846	6,173,736	12,958,641	12,325,703	9,817,017
Vehicle Accident	6,402,294	9,672,306	8,544,245	11,989,632	8,883,447	9,098,385
Transmission Line	3,985,944	5,274,792	4,628,192	5,447,430	10,567,534	5,980,778
Unknown	3,165,530	4,169,819	4,461,815	3,337,894	3,374,215	3,701,855
Scheduled	1,117,198	2,991,957	3,283,390	3,425,738	3,722,155	2,908,088
Other**	3,432,411	3,649,957	4,736,952	1,382,793	1,236,955	2,887,814
Lightning	2,903,152	1,844,302	2,489,698	1,952,233	3,265,069	2,490,891
Animal	1,572,274	1,316,438	1,402,548	1,419,898	2,025,262	1,547,284
Total	58,254,611	73,248,452	70,359,799	76,885,935	81,641,506	72,078,061

* Vegetation includes both inside and outside the right-of-way, as well as vines.
** Other causes include contamination/flashover, customer equipment, fire, foreign object, other utility, overload, customer, and vandalism.

IV. DISTRIBUTION MANAGEMENT PLAN

Q. What is the purpose of I&M's Distribution Management Plan?

A. The purpose of the Plan is to improve or maintain customer experience by improving reliability, addressing public safety, and modernizing the grid.

Q. What are the key objectives of the Plan?

A. I&M's Plan focuses on six key objectives:

- *Maintain and improve safety* – The safety of the public, I&M's employees, and its contractors is the first priority. Safety is a foundational element of all of I&M's planned distribution system improvements. In addition, I&M has designed specific programs, such as inspections and replacing aging assets, to reduce the probability of safety incidents.
- *Focus on the customer experience* – A key principle for I&M's distribution planning efforts is focusing on the customer experience. This means reducing the number of outages or avoiding outages altogether, responding in a safe and timely manner to outages, and giving customers tools and information that will allow them to use electricity more efficiently.
- *Address reliability, resiliency, and aging infrastructure* – I&M has developed its Plan to address the principal causes of customer outages on its system (e.g., vegetation management, aging infrastructure) and to improve system resiliency – that is, the ability of the system to minimize the number and duration of customer outages no matter the cause.
- *Create an enabling platform* – I&M is working to modernize its distribution system to integrate and optimize the use of new technologies and services.

An enabling platform will allow the distribution system to incorporate different distributed energy resources; to be able to react automatically to sudden generation or load changes; to maintain power quality and reliability; and to ensure real-time, dynamic communication with these technologies.

- *Improve data availability and use (both internally and externally)* – I&M plans to install AMI into its distribution system to allow for two-way communications and near real-time billing and operational data. Customers will be able to access this data to help them use electricity more efficiently, and I&M can use the data to more accurately detect power outage locations, to identify precursors to failing equipment or vegetation contacts prior to an outage, and to improve service restoration.
- *Maintain flexibility* – Over time, I&M will need to be able to respond to changing conditions and modify its Plan. This may include introducing additional programs, modifying programs, or shifting resources between programs to address emerging priorities. Flexibility is key in allowing I&M to effectively and efficiently respond to the needs of its customers, the distribution system, and changes in equipment and technology.

Q. What is the timeline of the Plan?

A. I&M considers investments in its distribution system to be an ongoing process that I&M will continue to be working on for many years. My testimony presents the Plan for the two-year period 2019-2020.

Q. How did I&M develop the programs included within its Plan?

A. I&M developed the Plan by focusing on several inputs to determine the programs and projects that were most needed and would bring the most value for I&M's customers. These inputs include:

- *Analysis of Circuit Performance* – Evaluating circuit performance aids in understanding issues that are causing outages, as well as what efforts are needed to improve performance. Circuit performance data is circulated to the field personnel who are responsible for and most familiar with the circuits in question. The field personnel use their knowledge of their local system and components to assist with prioritizing projects.
- *Engineering Expertise* – I&M's insight into equipment performance, coupled with the equipment's failure characteristics, is guided by the knowledge and experience of I&M's engineers. By design, engineering works closely with I&M field personnel, who know where failures occur, what causes outages, and which areas or types of equipment have the greatest frequency of outages. Although I&M's engineering analyses may show that an asset is operating beyond its expected design life, local I&M field personnel responsible for inspecting and maintaining these assets contribute to decisions on whether assets should be replaced.
- *Inspection Results* – I&M systematically conducts inspections of its distribution equipment. These inspections gather data about specific asset conditions that I&M uses to prioritize its asset renewal and reliability

programs. This proactive approach helps identify issues that may otherwise go undetected and result in interruptions or public safety issues.

- *Industry Data* – I&M considers industry data and analyses to assist in identifying general failure rates and obsolescence of equipment. For example, I&M, along with AEP engineering, partners with consultants and electric utilities across the U.S., using industry benchmarking data for comparisons of failure rates and causes. This information was coupled with I&M's own analysis on failure rates, such as for poles, to help approximate an age profile for I&M distribution assets.
- *New Technologies* – Rapid improvements in distribution hardware and infrastructure, such as smart grid technologies, have been incorporated into the Plan. These new technologies will allow I&M to address changes in how customers meet their energy needs, use the distribution system, and interact with utilities.

Q. Are there any other factors that I&M must consider in developing the Plan?

A. Yes. I&M must take the following considerations into account:

- *Customer Service* – There are several day-to-day customer service activities that I&M must perform, such as installing new service, restoring outages, and relocating distribution facilities to accommodate road construction, water and sewer line installation, sidewalk construction, and the like. Many times these customer service activities must take priority.
- *Workforce Availability* – I&M evaluates the correct mix of internal and external labor in order to effectively and efficiently execute its distribution

projects in the most cost effective manner. I&M is supported by AEP's Contracts Administration Group, which is charged with identifying the need, preparing an appropriate bid package specific to the work assignment, soliciting bids from competent contractors, and analyzing the lowest and best bid provided.

- *Scheduling Considerations* – Some projects, such as those requiring station outages, must be scheduled in coordination with PJM. Dynamic system loading – which is influenced by weather, other projects, and unanticipated outages – can also influence the timing of project work. These considerations are factored into I&M's planning and are reviewed weekly so that assignments can be adjusted to schedule changes.
- *Financial Parameters* – The costs of distribution projects, both O&M and capital, are a key factor in I&M's distribution planning. Some asset replacement programs do not have a short-term reliability or safety benefit but will reduce financial risks to customers in the longer term. The mitigation of customer risk involves determining the benefit to the customer of increasing the spending on an asset in the short term to avoid a significant future increase in cost.

Q. How does I&M develop cost estimates for the Plan?

A. The cost estimates for the programs in the Distribution Management Plan are developed using the same parametric cost analysis I&M uses for all distribution work. This parametric analysis includes an estimate for internal labor, material, outside services, stores, and fleet. I&M creates detailed project scopes, including

equipment specifications and construction standards. I&M relies on its experience and engineering expertise and historical project cost information to develop the best estimate of program costs. Input is gathered from I&M employees who have day-to-day responsibility for operating and maintaining the distribution system. I&M uses a standardized set of cost assumptions based on a per-unit basis, such as labor rates, material costs, and overheads (e.g., engineering, project management, and administrative support). Estimates incorporate current construction and design standards and represent average costs for each component of the Plan.

Q. How does I&M monitor and evaluate the progress and costs of the Plan?

A. I&M's Project Management Office provides oversight for all facets of the Plan, including development, project initiation, execution, monitoring, and closing processes. This group evaluates progress, quality, adjustments, and costs, which provides transparency and accountability for all programs and projects in the Plan.

Q. What are the main categories of investments in the Plan?

A. The Plan involves four main categories of investments, which are implemented through five programs, as shown on Figure DSI-3:

Figure DSI-3
I&M Distribution Management Plan Categories & Programs

Category	Program	Description
Reliability Enhancement	Vegetation Management	The cornerstone of I&M's Plan is to complete the widening of the clearance zones around distribution equipment and transition to a proactive, cycle-based vegetation management program to meet customer expectations for fewer and shorter outages.
	Asset Renewal and Reliability	I&M has developed a suite of programs to replace aging infrastructure and harden the system to improve reliability and resiliency.
Distribution Asset Management	Major Projects (Capacity Additions, Station & Line Components)	I&M has identified specific asset renewal and reliability projects that are needed to address contingency capacity constraints, improve outage recovery, replace or upgrade aging or obsolete station equipment, and perform voltage conversions of select stations and distribution circuits.
Risk Mitigation	Inspection Programs (Safety, Poles, Reliability)	I&M will perform inspections designed to identify potential hazards on the distribution system, promote public safety, and help prioritize projects in the Plan.
Grid Modernization	AMI, Sensors, Distribution Automation, Smart Reclosers and Circuit Ties	I&M has identified technologies that will help I&M monitor, protect, and improve the operation and reliability of its distribution system.

A. Distribution Management Plan: Vegetation Management

Q. Please summarize the Company's vegetation management program reflected in the Capital Forecast Period and Test Year O&M.

A. As discussed in Cause No. 44967, I&M's vegetation management program involves moving away from a reactive approach to managing vegetation (trees, brush, and vines) to a systematic, cycle-based approach. The program begins with an initial four-year period (2018 through 2021) that involves two components: First, I&M is expanding overhead conductor clearance zones, which is the space surrounding a distribution line that generally should be kept free of vegetation. I&M is widening narrow zones and addressing issues such as trees affected by the Emerald Ash Borer (EAB) beetle, which has undermined the integrity of many ash

trees in our service territory. Second, for clearance zones that are already sufficiently wide, I&M performs remedial maintenance to restore clearance zones to their original width. I&M is on schedule to complete the initial four-year period as planned. In 2022, after the initial period, I&M will begin a regular four-year vegetation management cycle. Figure DSI-4 summarizes results for 2018 and the work plan for 2019-2022. Figure DSI-5 shows I&M's historical and forecasted vegetation management costs for 2018-2020.

Figure DSI-4
Summary of Vegetation Management Work Plan
(Indiana – Overhead Primary Line Miles)

Work	2018 Actual	2019	2020	2021	2022
Clearance Zone Widening	646	659	877	282	0
Remedial Maintenance	1,666	1,904	1,899	2,264	2,546

Figure DSI-5
Vegetation Management Program Capital and O&M Expenditures (Indiana – $000)

Cost Type	2018	2019	2020
Capital	$8,691	$9,307	$9,187
O&M	$17,452	$16,241	$16,241

Q. What are the drivers and benefits of I&M's vegetation management program?

A. As noted above, increasing challenges to I&M's distribution system have led to declining reliability, and vegetation management remains the single greatest investment I&M can make to improve reliability. Clearance zone widening and cycle-based vegetation management programs are widely acknowledged by the industry as the most effective way to reduce vegetation-related outages. I&M's own experience has shown that the four-year average of reliability improvements yields a significant reduction in customer minutes of interruption. Most recently,

when I&M increased its vegetation management activities in 2018, CMI due to vegetation decreased by 2.6 million minutes or 12.4% between 2017 and 2018.

B. <u>Distribution Management Plan: Asset Renewal and Reliability Programs</u>

Q. Please summarize I&M's asset renewal and reliability programs reflected in the Capital Forecast Period and Test Year O&M.

A. I&M's Asset Renewal and Reliability Programs are a suite of programs developed to replace aging infrastructure and make the distribution system more resilient:

- *Overhead Line Rebuild Program* – I&M constructs/reconstructs overhead lines and associated equipment to modern standards. This reduces the duration of outages and avoids CMI by using current standards that incorporate more robust design specifications. In addition, overhead rebuilds enhance safety for customers and I&M personnel by decreasing the likelihood of downed lines or failure of equipment.
- *Pole Replacement/Reinforcement Program* – I&M replaces poles where necessary based primarily on evaluations performed as part of the pole inspection program. Externally, poles may appear to be in good condition, but may have deteriorated internally or below the ground line to the point where they no longer are sufficiently strong enough to withstand horizontal loads produced by wind, or vertical loads caused by elements such as ice.
- *Underground Residential Distribution (URD) Cable and Live-Front Replacement Program* – I&M identifies deteriorated and unjacketed cable in need of replacement and simultaneously replaces live-front padmount transformers.

- *Underground Station Exit Cable Replacement Program* – I&M replaces aging underground station exits. The underground station exit is one or more large underground cables from the distribution breaker in the station to the line circuit served by the breaker. A failure on this critical portion of the circuit interrupts service to all customers served by that breaker.
- *Distribution Feeder Breaker Replacement Program* – I&M replaces distribution feeder breakers on a proactive basis. This will include the replacement of specific types of obsolete breakers.
- *Underground (UG) Network Rebuild Program* – I&M will continue replacing aging network secondary and primary components in the I&M South Bend, Elkhart, Fort Wayne, and Muncie networks.

Q. What are the drivers and benefits of the asset renewal and reliability programs?

A. As described above, a growing portion of I&M's distribution assets are reaching the end of their expected design lives. Although age is not the only factor for failure, assets that are approaching or exceeding the end of design life are much more likely to fail. These concerns are compounded when multiple assets begin to reach the end of their design life in the same general time span, creating a compounding effect on the number of outages and the length of time it takes to restore service after an outage.

In addition, older assets tend to be harder to recover or replace after a failure, because it is often difficult to obtain available parts for aging equipment. Older assets also pose inherent safety risks – equipment that is operating after the

end of its design life has a higher incidence of catastrophic failure during operation. These factors prompted I&M to plan the comprehensive set of asset renewal and reliability programs discussed here.

I&M's asset renewal and reliability programs allow I&M to systematically and proactively address these risks to reliability, resiliency, and safety. Without these programs I&M would experience more asset failures and the quality of service to customers would unnecessarily suffer. Also, since the failure of aging assets poses a greater probability of public and I&M employee exposure to safety risks, a run-to-failure alternative is not viable. I&M has analyzed the primary outage causes and has identified the specific equipment types that have caused the majority of the reliability issues that I&M has been experiencing in recent years. I&M's asset renewal and reliability programs are specifically designed to address the equipment types identified in this analysis.

Q. What are the work scope and timing of I&M's asset renewal and reliability programs?

A. Figure DSI-6 shows the work scope and timing of the asset renewal and reliability programs over the 2019-2020 Capital Forecast Period:

Figure DSI-6
Asset Renewal and Reliability Work Plan (Indiana)

Program	Units	2019	2020
Overhead Rebuild - Single Phase Line Rebuild	Miles	20.6	22.7
Overhead Rebuild - Three Phase Line Rebuild	Miles	22.7	30.8
Overhead Rebuild - Circuit Ties*	Miles	13.8	0.0
Overhead Rebuild - Voltage Conversion	Miles	1.8	3.8
Overhead Rebuild - Sectionalizing	Units	11	10
Overhead Rebuild - Recloser Replacement	Units	45	39
Overhead Rebuild - Capacitor Replacement	Units	34	26
Overhead Rebuild - Porcelain Cutout & Lightning Arrester Replacement	Units	5,171	4,322
Overhead Rebuild - Crossarm Replacement**	Units	706	379
Pole Replacement/Reinforcement**	Units	2,438	2,122
URD Cable and Live-Front Replacement	Miles	14.41	14.86
Underground Station Exit Cable Replacement	Feet	5,412	4,952
Distribution Feeder Breaker Replacement	Units	18	23
UG Network Rebuild Program	Miles	16.2	5.2

*The Circuit Ties Program was transferred to Modernization as the Smart Circuit Ties Program.
**For crossarm and pole replacements, the number of units replaced may increase or decrease based on the outcome of the risk mitigation programs (i.e. pole inspections and overhead line inspections).

These programs are ongoing and will continue beyond the two years (2019-2020) discussed in this proceeding. Attachment DSI-1 provides additional details related to I&M's asset renewal and reliability programs.

Q. What are the costs of the asset renewal and reliability programs?

A. Figure DSI-7 provides projected capital expenditures for the asset renewal and reliability programs over the 2019-2020 Capital Forecast Period.

Figure DSI-7
Asset Renewal and Reliability Program Capital Expenditures (Indiana – $000)

Program	2019	2020
Overhead Rebuild - Single Phase Line Rebuild	$1,823	$1,921
Overhead Rebuild - Three Phase Line Rebuild	$5,728	$7,732
Overhead Rebuild - Circuit Ties*	$2,755	$0
Overhead Rebuild - Voltage Conversion	$534	$1,066
Overhead Rebuild - Sectionalizing	$445	$401
Overhead Rebuild - Recloser Replacement	$283	$253
Overhead Rebuild - Capacitor Replacement	$589	$349
Overhead Rebuild - Porcelain Cutout & Lightning Arrester Replacement	$1,539	$1,125
Overhead Rebuild - Crossarm Replacement	$686	$235
Pole Replacement/Reinforcement	$4,767	$4,090
URD Cable and Live-Front Replacement	$3,933	$4,147
Underground Station Exit Cable Replacement	$892	$828
Distribution Feeder Breaker Replacement	$5,425	$4,612
UG Network Rebuild Program	$10,592	$8,371
Totals	$39,991	$35,130

*Much of the Circuit Ties Program was transferred to Grid Modernization as the Smart Circuit Ties Program.

C. Distribution Management Plan: Major Projects

Q. Please summarize I&M's major projects reflected in the Capital Forecast Period and Test Year operating expenses and the drivers and benefits for these projects.

A. Each year, I&M completes various distribution projects, termed "major projects," that are not included in the asset renewal and reliability programs or risk mitigation

categories that I describe in my testimony. These projects are necessary to address capacity and contingency capacity constraints (i.e., the ability to serve customers from another location, thereby reducing the length of an outage), to improve outage recovery, to replace or upgrade aging or obsolete station equipment, to implement supervisory control and data acquisition (SCADA), and to perform voltage conversions of select stations and distribution circuits.

To develop these major projects, several I&M groups, from planning to engineering to the Distribution Dispatch Center, work together to review I&M's distribution system to identify potential issues. I&M uses computer models, which take into consideration load flows and overloads, to identify system constraints. Next, I&M reviews asset health information collected through field inspections to identify equipment conditions. Based on the system constraints and equipment conditions identified, I&M determines which major projects will help reduce the greatest number of CMI, which in turn helps create a project priority listing.

Completing the major projects helps improve the reliability of the system, improve the ability to serve increased load, and promote safety and enhance the technological capabilities of I&M's system by replacing or upgrading aging or obsolete station equipment. Attachment DSI-2 identifies the benefits for each specific major project that is part of I&M's Distribution Management Plan.

Q. What are the work scopes and timing of I&M's planned major projects?

A. I&M's planned major projects for 2019-2020 are detailed in Attachment DSI-2.

Q. What are the costs of the major projects?

A. Figure DSI-8 provides I&M's projected capital expenditures for major projects over the Capital Forecast Period.

Figure DSI-8
Major Project Capital Expenditures (Indiana – $000)

Major Projects	2019	2020	In-Service Year
Bosserman-New Carlisle	$9,682	$0	2019
Colfax Station	$347	$0	2019
Elkhart Area Network	$6,170	$0	2019
Liberty Center Station	$959	$0	2019
Limberlost Station	$2,381	$0	2019
Montpelier Underbuild	$139	$0	2019
Muessel Station	$347	$0	2019
Fuson Station	$1,919	$4,021	2020
Rosehill Station	$2,247	$343	2020
Royerton Station	$0	$44	2020
SDI Improvements	$116	$343	2020
Strawboard Station	$405	$3,109	2020
Totals	$24,710	$7,860	

D. Distribution Management Plan: Risk Mitigation Programs

Q. Please summarize the Company's risk mitigation programs reflected in the Capital Forecast Period and Test Year operating costs.

A. I&M has developed the following risk mitigation programs to improve public safety:

- *Pole inspections* – I&M inspects its distribution poles and replaces or reinforces them when necessary in support of the Pole Replacement/Reinforcement Program I described earlier.

- *URD equipment inspections* – I&M inspects the above ground equipment of the URD system (e.g., pedestals, padmount transformers, and primary risers) to identify safety hazards and equipment in need of replacement.
- *Overhead line inspections* – I&M inspects overhead facilities and equipment to evaluate condition and identify deteriorated or damaged equipment.
- *Contact voltage inspections* – I&M inspects downtown underground network areas for contact voltage on any metallic equipment or structure to ensure public safety.

Q. What are the drivers and benefits of the Company's risk mitigation programs?

A. At its core, the risk mitigation program is intended to identify and remediate assets that, due to age or condition, present a potential safety risk to the public or employees. As I&M's system ages and the potential for asset failures increases, a targeted risk program is necessary to provide the greatest margin for public and employee safety.

Q. What are the work scopes and timing of the Company's planned risk mitigation programs?

A. Figure DSI-9 summarizes the risk mitigation program work plan for 2019-2020:

Figure DSI-9
Summary of Risk Mitigation Work Plan – Number of Inspections (Indiana)

Program	Units	2018 (Actual)	2019	2020
Pole Inspections	Poles	42,790	15,291	30,582
URD Equipment Inspections	Units	15,015	5,855	11,710
Overhead Line Inspections	Miles	2,198	1,224	2,448
Contact Voltage Inspections	Cities	4	4	4

Attachment DSI-1 provides additional details about these risk mitigation programs.

Q. What are the expected costs of the risk mitigation programs?

A. Figure DSI-10 provides the actual O&M expenditures for the risk mitigation programs for 2018 and forecasted expenditures for 2019 and the 2020 Test Year:

Figure DSI-10
Risk Mitigation Program O&M Expenditures (Indiana – $000)

Risk Mitigation	2018 (Actual)	2019	2020
Pole Inspections	$782	$250	$515
URD Equipment Inspections	$303	$61	$125
Overhead Line Inspections	$290	$110	$227
Contact Voltage Inspections	$11	$77	$80
Totals	$1,386	$498	$947

E. Distribution Management Plan: Grid Modernization Projects

Q. Please summarize I&M's grid modernization projects reflected in the Capital Forecast Period and Test Year operating costs.

A. I&M grid modernization projects are designed to utilize technology to improve system reliability and functionality and enhance the service customers receive. These projects include:

- *Advanced Metering Infrastructure (AMI)* – AMI refers to systems that measure, collect, and analyze energy usage from meters through a communications network. This infrastructure includes hardware, such as meters that enable two-way communications (AMI meter), the communications network, customer information systems, and meter data management systems. In Part V of my testimony, I describe I&M's plans for deployment of AMI technology beginning in 2020.

- *Network Monitoring* – I&M's underground Network Monitoring system is a state-of-the-art system that integrates sensors, data concentrators, and communication to provide real time data to I&M's Distribution Dispatch Center on transformer oil temperature, oil pressure, vault water levels, and current and voltage readings. This enables engineers and operators to monitor the underground network system remotely and address issues or concerns in a timely, accurate manner.
- *Distribution Automation (DA)* – DA consists of electronic devices with capabilities to quickly identify when a fault condition has occurred. The DA system can isolate the condition and automatically reconfigure and restore power to the greatest number of customers. I&M personnel can then be sent to resolve the issues that caused the event.
- *Station Supervisory Control and Data Acquisition (SCADA)* – SCADA systems include hardware and software components installed at distribution substations; the hardware gathers and feeds data into a system that has SCADA software and is able to communicate with the Distribution Dispatch Center. I&M will continue to build out its distribution station SCADA technology on all distribution feeder stations to improve system visibility and provide remote operability.
- *Distribution Line Sensors* – Following a successful pilot program in 2018, I&M is expanding deployment of distribution line sensors, which are devices that are attached to overhead distribution lines and continuously monitor parameters of the lines in real time (e.g., current, voltage, fault currents).

These devices use a variety of communication capabilities to report to a control center when a fault occurs. By analyzing the data from the sensors placed at strategic locations, I&M's engineers are able to monitor the state of the grid in real time, identify faults and outages faster, locate approximate outage locations with greater accuracy, conduct real-time loading of the circuit portions downstream from the sensor, and monitor and analyze all interruptions and interferences affecting wave patterns, which allows I&M, over time, to predict certain outages.

- *Smart Reclosers* – This program consists of installing smart reclosers that can be remotely controlled in I&M's Distribution Dispatch Center (DDC).
- *Smart Circuit Ties* – Following a successful line sensor pilot, I&M is implementing a smart circuit tie program in which I&M will upgrade circuits by incorporating smart reclosers and deploying distribution line sensors in areas that currently lack remote visibility. This will allow the DDC to remotely evaluate the loading configuration of circuits and thereby restore service faster when tying circuits together.

Q. What are the drivers and benefits of I&M's grid modernization projects?

A. I&M grid modernization projects will improve system reliability, improve safety, and increase customer satisfaction:

- As I describe in greater detail in Part V, AMI provides for significant improvements in customer service by offering unprecedented operational benefits including remote reading, remote activation, load monitoring, service quality evaluation, and many other advantages to I&M customers.

- Distribution line sensors help I&M to remotely identify and locate faults within an approximate location, allowing crews to hone in on outage areas more quickly than they would with line patrols.
- Distribution SCADA improves visibility by alerting I&M to issues at the station; this allows crews to be dispatched to resolve issues at the problem area.
- Network monitoring provides visibility, data, and information to support the network. Monitoring minimizes risk by enabling early detection of abnormalities as well as increasing situational awareness to operators. This is particularly critical to public safety given the downtown, urban locations of I&M's four electrical network systems.
- DA automatically reconfigures circuits to isolate the loss of voltage or fault condition so that power can be restored to customers. DA also allows I&M to verify that service has been restored following an interruption.
- Similarly, smart reclosers and smart circuit ties allow I&M to remotely assess and restore power under the proper conditions, thus improving recovery time in the event of an unplanned outage.

Q. What are the work plans and expected costs of I&M's grid modernization projects?

A. The grid modernization work plan is shown on Figure DSI-11. Capital expenditures for the Capital Forecast Period are shown in Figure DSI-12, and O&M expenses are shown on Figure DSI-13. Attachment DSI-1 provides additional details about these grid modernization projects.

Figure DSI-11
Summary of Grid Modernization Work Plan (Indiana)

Grid Modernization	Units	Driver	2019	2020
AMI	Units	Customer Experience, Reliability	0	60,038
Distribution Line Sensors	Units	Reliability	120	0
Distribution Automation	Scheme	Reliability	6	5
Station SCADA	Station	Reliability	1.75	2.25
Smart Reclosers	Units	Reliability	105	93
Smart Circuit Ties	Line Miles	Reliability	19.19	24.32
Total	Units	Driver	2019	2020

Figure DSI-12
Grid Modernization Project Capital Expenditures (Indiana – $000)

Grid Modernization	2019	2020
AMI	$0	$ 10,777
Distribution Line Sensors	$189	$0
Distribution Automation	$6,771	$4,878
Station SCADA	$2,433	$3,350
Smart Reclosers	$1,477	$1,326
Smart Circuit Ties	$6,294	$13,238
Totals	$17,164	$33,569

Figure DSI-13
Projected Grid Modernization Project O&M Expenditures
(Indiana – $000)

Grid Modernization	2019	2020
AMI	$0	$310
Smart Reclosers	$2	$2
Smart Circuit Ties	$126	$164
Total	$128	$166

V. AMI DEPLOYMENT

Q. What are I&M's plans to implement AMI in Indiana?

A. I&M will be deploying AMI across its Indiana service territory over a three-year period from 2020 through 2022. The goal is to deploy AMI to all customers, with the possible exception of large industrial customers.

Q. Do other I&M witnesses support I&M's AMI deployment plan?

A. Yes. Company witness Thomas discusses the Company's decision to deploy AMI at this time. Company witness Lucas supports the customer engagement strategy. Company witness Williamson describes I&M's requested regulatory treatment. My testimony supports the need for this investment from an operational perspective, the cost of installing the meters and communication network, and the benefits that AMI will provide for the distribution system.

Q. Why is AMI a necessary investment to make at this time from an operational perspective?

A. First, 35% of the AMR meters deployed in I&M's Indiana service territory will reach the end of their design life by the start of the proposed AMI deployment. Rather than a patchwork AMI deployment to replace AMR meters as they reach the end of their design lives, it is prudent to build out the entire AMI system in a single deployment. This approach is the most efficient and effective way to gain the most benefits from the AMI technology. For example, if AMI were deployed in pockets across I&M's Indiana service territory, the cost of deployment would increase; areas without AMI would not benefit from visibility into system conditions and

outage restoration time would be higher; and customers without AMI would have fewer options to understand their electric usage.

Second, as noted above, I&M is focused on making investments that will lead to better reliability. AMI provides visibility into I&M's distribution grid and allows I&M to manage its system better from an operational perspective. Real-time monitoring and remote meter control provides a wealth of information not available without AMI. As a result, AMI will lead to improved reliability. I provide more details on these benefits later in my testimony.

Third, AMI technology has matured to a point where the cost of the technology is decreasing at the same time that the capabilities of the system that I&M intends to build out will offer a broader range of options. AMI is the direction the electric industry is taking and it is likely that there will be more resources available in the future to support AMI than there will be to support AMR.

Q. What are the benefits of AMI from an operational perspective?

A. Deploying AMI will lead to numerous operational benefits that will allow I&M to improve its service to customers. These operational benefits include:

- *Improve Reliability* – AMI will be integrated with service restoration systems to more accurately detect power outage locations; this will allow I&M to dispatch crews more efficiently to reduce outage duration. Also, AMI will provide dynamic service integrity evaluations at the customer level. These evaluations can be set up to alert district personnel to begin an investigation whenever one or more customers has experienced multiple interruptions in a certain period.

- *Improve Public Safety* – AMI will enhance public safety by providing mechanisms to proactively de-energize the grid from a control center. Having more visibility into the system provides additional information that helps minimize risk and safety hazards by enabling early detection of issues on the system. AMI meters will also be able to alert for a hot socket condition with potential to cause a fire. Specifically, temperature data from AMI meters will be collected and analyzed to determine whether the temperature of any meter is an outlier compared to nearby meters. If an anomaly is found, a service technician will be dispatched to investigate the issue. This has the potential to significantly reduce safety hazards.
- *Improve Employee Safety* – AMI meters can be read remotely, reducing driving miles and customer site visits, which in turn greatly reduces traffic accidents and injuries due to hazardous situations on customers' premises.
- *Mitigate Tampering and Theft* – AMI meter data will allow I&M to detect meters that have been tampered with. If customers tamper with meters to reconnect them when service has been disconnected or for other reasons, AMI meter data can be analyzed to detect such tampering. For instance, in 2018, I&M affiliate Public Service Company of Oklahoma (PSO) used AMI data to address 313 potential diversions of electricity. Of these, 271 had diversions in place, and 42 were found to be a hazard to public safety. AMI meters will also allow I&M to detect meters that have been stolen and installed in a new location. AMI meter data can be used to detect stolen meters and to triangulate their location.

- *Improve Meter Accuracy* – In the past, meter errors were difficult to detect, or took time to correct. For instance, if a meter had an error at the beginning of a billing cycle, I&M may not learn about the error until the end of the cycle when the meter was read. In fact, some minor reading errors may not have been detected for longer periods. With AMI meters, I&M can detect many types of reading errors quickly, so that the problem can be fixed. This will reduce lost revenue and the need to estimate bills due to meter errors.
- *Remote Reconnection* – When accounts are disconnected for non-payment, AMI technology will allow I&M to restore service more quickly once payment is received, because reconnection can be expedited from the office without having to schedule a site visit to the customer's premises.

Q. What other benefits does AMI offer customers?

A. In addition to improved safety and reliability, the experiences from I&M affiliates that have installed AMI – including PSO, AEP Texas, and AEP Ohio – show that AMI will improve the customer experience in several ways:

- Customers will have the ability to view daily or hourly usage data via a web page or app, including the ability to receive alerts based upon energy usage.
- If a customer experiences trouble, the Company will be able to remotely "ping" the meter to aid in determining if the meter is operating properly.
- Customers will experience shorter wait times for electric service turn-on and turn-off because the Company will be able start and stop service remotely instead of needing to send an employee to the customer's meter.

- The Company can be notified when a customer's power goes out without the customer needing to contact the Company. If the customer is not at home, I&M can be notified of an outage and make repairs before the customer even returns home.
- Customers will be able to participate in new advanced programs as they are developed, providing innovative opportunities for customer convenience, reduced energy consumption, and reduced bills.

Company witness Lucas provides more detail about the proposed customer engagement platform that I&M will use to educate, inform, and empower customers to take ownership of their energy usage.

Q. Will even further customer benefits from AMI be possible in the future?

A. Yes. As described above, there are numerous ways that customers will benefit right away from AMI technology. In addition, AMI provides the potential to enable further customer benefits in the future. For instance, AMI meters and the AMI communications network can support other operational initiatives, such as Volt/VAR optimization (VVO) and grid sensors. Further, once I&M gathers and analyzes AMI data, I&M expects to be able to predict equipment failures based on wave patterns, which will improve reliability and enhance public safety.

Q. What are the expected costs of I&M's AMI deployment plan?

A. Figure DSI-14 shows expected costs to install AMI meters and the communication network. Company witness Lucas supports the cost of the software and customer engagement strategy supporting the AMI technology.

Figure DSI-14
Expected AMI Meter & Communication Network Costs (Indiana – $000)

Capital	2020	2021	2022
Number of Meters (000)	60	214	191
Network Material	$957	$3,598	$3,419
Meter Material	$8,102	$30,556	$29,249
Labor	$1,631	$6,140	$5,837
Removal	$87	$334	$319
Total Capital	$10,777	$40,628	$38,824

O&M*	$309	$1,253	$1,239

* Values represent updated annual O&M estimates. Company witness Williamson describes the total forecasted O&M for AMI deployment included in the Test Year.

Q. What is the basis of this cost estimate?

A. This cost estimate is based on a Class 3 estimate which has a confidence of +30%/-20%. A Class 3 estimate is an industry standard for project budgeting. I&M's AMI cost estimate is based on a detailed review of the cost to install AMI along with potential risk factors. I&M recently bid the installation of 17,000 meters in Michigan, and these costs were used to update installation labor estimates.

I&M's AMI cost estimate is aided by experience gained by the American Electric Power Service Corp (AEPSC) and other AEP operating companies. I&M has benefited from the buying power and experience of AEPSC's procurement function which purchases AMI meters in bulk. In addition, I&M affiliate PSO completed deployment of AMI in July 2016, AEP Texas completed deployment of AMI in February 2014, and AEP Ohio have begun AMI deployment. This has allowed I&M to benefit substantially from AEP volume discounts on both the capital meter costs and the ongoing annual O&M ITRON support fee per meter.

VI. DISTRIBUTION CAPITAL EXPENDITURES

Q. What capital expenditures are you supporting in this proceeding?

A. I am supporting distribution capital expenditures during the Capital Forecast Period from January 1, 2019 through December 31, 2020. This twenty-four-month period commences after the conclusion of the historical base period and continues through the end of the Test Year. I present all amounts on a total Company basis; Company witness Duncan supports the jurisdictional allocation of costs.

Q. How do the capital expenditures discussed in this Part VI of your testimony relate to the capital expenditures discussed in Part IV (Distribution Management Plan) and Part V (AMI Deployment)?

A. This Part VI summarizes and supports all distribution capital expenditures on a total Company basis during the Capital Forecast Period and is inclusive of all capital expenditures discussed elsewhere in my testimony. The level of total Company distribution capital supported in this Part VI is the level included in the forecast presented by Company witness Lucas.

Q. How is the total amount of capital expenditures to be made in I&M's distribution system determined?

A. I&M has reviewed its distribution system in order to determine the level of work that needs to be completed, including I&M's Distribution Management Plan, in order to maintain the integrity of I&M's system and provide safe and reliable service. Projects are based on sound engineering plans, and I&M's cost estimates are derived from Company experience and proven, effective methods. I&M's forecasting process is described further by Company witness Lucas.

Q. Please describe the major categories of distribution investments.

A. Figure DSI-15 shows total Company distribution capital expenditures during the Capital Forecast Period excluding Allowance for Funds Used During Construction (AFUDC).[2]

Figure DSI-15
I&M Distribution Capital Expenditures ($000 – Total Company – Excluding AFUDC)

Category	2019 Capital Expenditures	2020 Capital Expenditures	2019-2020 Total Capital Expenditures
Asset Renewal and Reliability	$65,595	$56,838	$122,433
Customer Service, City and State Requirements, and Other	$55,848	$54,530	$110,378
Major Projects	$59,624	$62,978	$122,602
Grid Modernization	$36,425	$69,550	$105,975
Vegetation Management	$9,307	$9,187	$18,494
Totals	$226,798	$253,083	$479,882

Capital expenditures related to vegetation management, asset renewal and reliability, major projects, and grid modernization are described in connection with the Distribution Management Plan above. Capital expenditures for Customer Service, City and State Requirements, and Other relate to the installation of service to new residential and commercial customers, including the necessary transformers and meters, as well as outage restoration. These requirements are frequently associated with being located in or near public road rights-of-way (ROW), and often involve the relocation of distribution facilities to accommodate

[2] Figure NAH-2 of Company witness Heimberger's testimony shows how AFUDC is added to capital expenditures.

projects such as road construction, water and sewer line installation, and sidewalk construction.

Q. What amount of distribution capital investment will be placed in service during the Capital Forecast Period?

A. Figure DSI-16 shows the amount of distribution capital investment (including AFUDC) that will be placed in service during the Capital Forecast Period.[3]

Figure DSI-16
I&M Distribution Additions to Electric Plant in Service (EPIS)
($000 – Total Company – Including AFUDC)

Category	2019-2020 Additions to EPIS
Asset Renewal and Reliability	$136,894
Customer Service, City and State Requirements, and Other	$111,249
Major Projects	$125,679
Grid Modernization	$93,697
Vegetation Management	$18,650
Totals	$486,170

Q. Are the Company's projected distribution capital expenditures during the Capital Forecast Period representative of the distribution expense necessary to provide safe and reliable service?

A. Yes, the projected distribution capital expenditures are representative of distribution service activities that are necessary to serve I&M's customer base. Several factors affect the expenditure levels that are incurred by I&M on an ongoing basis. These include many of the same factors that also affect O&M. For

[3] Figure NAH-2 of Company witness Heimberger's testimony shows how distribution additions to Electric Plant in Service (EPIS) are used to forecast total Company Plant in Service activity during the Capital Forecast Period.

example, as previously mentioned, I&M is experiencing an increasing failure rate of distribution equipment due to an aging infrastructure. In order to mitigate this trend, and to proactively replace distribution equipment at risk of failing, I&M must expend capital on its distribution system to maintain reliability. The projected level of capital expenditures represents the ongoing level necessary to provide safe and reliable service.

Q. Are the Company's projected distribution capital expenditures during the Capital Forecast Period reasonable and accurate?

A. Yes. The capital projects projected for the Capital Forecast Period represent planned distribution expenditures. Although I&M has the ability to prioritize capital dollars on an as-needed basis as circumstances warrant, the overall projected level of capital expenditures is reasonable and accurate.

VII. DISTRIBUTION OPERATIONS & MAINTENANCE EXPENSE

Q. What O&M expenses are you supporting in this proceeding?

A. I am sponsoring I&M distribution overall work plans, which includes Test Year O&M expenses. As noted by Company witness Lucas, I participate in the prioritization and allocation of I&M's O&M expenses based on work plan development.

Q. What are the historical base period and forward-looking Test Year levels of distribution O&M that you are supporting in this filing?

A. I am supporting historical base period (calendar year 2018) distribution O&M expense of $81.4 million and Test Year O&M expense of $76.3 million. I present O&M figures on a total Company basis unless otherwise indicated. Company witness Duncan supports the Indiana jurisdictional allocation in this proceeding.

Q. How do the O&M expenses discussed in this Part VII of your testimony relate to O&M expenses discussed in Part IV (Distribution Management Plan) and Part V (AMI Deployment)?

A. This Part VII summarizes and supports all distribution O&M expenses on a total Company basis during the historical based period and the Test Year and is inclusive of all O&M expenses discussed elsewhere in my testimony. The level of total Company distribution O&M supported in this Part VII is the level included in the forecast presented by Company witness Lucas.

Q. What are the major areas of distribution O&M expense?

A. There are three main categories of distribution O&M expense:

- *Ongoing O&M* – The largest portion of distribution O&M expense is Ongoing O&M, which includes expenses such as labor, fringe benefits, fleet vehicles, insurance, consumable materials and chemicals, mandated fees, and other expenses. Additionally, Ongoing O&M includes amounts associated with the Distribution Management Plan, such as O&M related to inspections as part of I&M's risk mitigation programs as shown in Figure DSI-10.
- *Vegetation Management O&M* – This expense relates to vegetation management, such as clearing ROW, on I&M's distribution system. I describe the Company's vegetation management program in detail above in connection with the Distribution Management Plan.
- *Major Storm O&M* – This expense relates to large storms that qualify as Major Storm events. I discuss Major Storm expense below.

Q. Please provide the historical base period and forward-looking Test Year distribution O&M expense by category.

A. Figure DSI-17 provides the historical base period and Test Year distribution O&M expense by category:

Figure DSI-17
I&M Distribution O&M Expenses (Total Company – $000)

Distribution O&M Category	Historical Base (2018)	Test Year (2020)
Ongoing O&M	$49,084	$42,843
Vegetation Management	$28,852	$29,458
Major Storms	$3,465	$4,048
Total	$81,401	$76,349

Q. Please show I&M's distribution O&M expenses since 2014.

A. Figure DSI-18 provides I&M's O&M expenses for the Historical Period and the previous four years.

Figure DSI-18
Historical Trend of I&M Distribution O&M Expenses (Total Company – $000)

Year	I&M Distribution Expenses
2014	$64,522
2015	$56,683
2016	$67,671
2017	$67,239
2018	$81,401

Q. Please explain the Major Storm O&M category.

A. The term "Major Storm" is based on the methodology outlined in IEEE Standard 1366-2012, IEEE Guide for Electric Power Distribution Reliability Indices. In Cause No. 44075, the Commission approved a Major Storm Reserve for I&M based on I&M's five-year average of major storm expense. The reserve allows

I&M to carry over costs associated with major storm restoration year to year, so I&M does not have to spend funds already allocated to other O&M projects to address major storms.

Q. What have I&M's Major Storm expenses been for the previous five years?

A. As shown in Figure DSI-19, I&M's annual major storm costs in Indiana have been as high as $4.6 million in the last five years and $12.5 million in the last ten years, but also as low as $1.2 million. Prior to that, in 2005, I&M experienced an ice storm impacting its Muncie district that resulted in major storm expense exceeding $15 million. Storm costs have varied because storms are random and unpredictable events that can vary in size and impact, causing Major Storm expenses to be volatile from one year to the next.

Figure DSI-19
I&M Major Storm Costs (Indiana – $000)

Year	Major Storm Costs
2008	$12,512
2009	$1,853
2010	$3,979
2011	$1,460
2012	$8,537
2013	$5,393
2014	$3,300
2015	$4,601
2016	$1,199
2017	$1,230
2018	$2,037

Company witness Williamson describes I&M's request to continue the $4,047,529 baseline and the Major Storm Reserve given the unpredictable and potentially significant nature of these costs.

Q. What benefits does the Major Storm Reserve convey to I&M's customers?

A. The Major Storm Reserve helps I&M maintain the reliability of its distribution system. Use of a reserve allows I&M to recover the true costs of a major storm without the need to use other funds already allocated to other necessary distribution O&M activities, such as reliability-related activities. Also, the Major Storm Reserve ensures that I&M customers pay rates that reflect the true costs of a major storm – no more and no less.

Q. Is the Test Year level of distribution O&M expense reflected in the Company's filing representative of the distribution O&M expense necessary to provide ongoing safe and reliable service?

A. Yes, the forecasted Test Year level of O&M expense is representative of distribution service activities that are necessary to serve I&M's customer base and maintain the reliability of I&M's distribution system. The distribution O&M expense in the Test Year is reasonable.

Q. Does this conclude your pre-filed verified direct testimony?

A. Yes.

VERIFICATION

I, David S. Isaacson, Vice President for Distribution Region Operations of Indiana Michigan Power Company (I&M or Company), affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 5-8-19

David S. Isaacson

Indiana Michigan Power - Indiana Distribution Management Plan

Note that estimates are all Class 3 estimates

Single Phase Line Rebuild 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	Hartford City	North	BL18-203 to BL18-167 Replace 6A CC with 2AA	1.00
2	Hartford City	North	BL18-167 to BL18-294 Replace 6A CC with 2AA	1.00
3	Modoc	Modoc	RA101B2-22 to RA100D2-73 Replace 6A CC with 2AA	0.29
4	Wesdel	Harrison	DE43-169 to DE42-388 Replace 6A CC with 2AA	0.92
5	Wesdel	Anthony	DE36B1-231 to DE35D4-7 Replace 6A CC with 2AA	0.46
6	Wesdel	Farmington	DE44-108 to DE44-85 Replace 4AS with 2AA	1.17
7	Wesdel	Harrison	DE43-32 to DE43-15 Replace 6A CC with 2AA	0.97
8	Sharon Road	Desoto	DE48-24 to DE48A1-4 Replace 6A CC with 2AA	0.90
9	Wesdel	Harrison	DE44-10 to DE44-74 Replace 6A CC & 4AS with 2AA	0.56
10	Montpelier	Roll	BL2-1 to BL9-5 Replace 6A CC with 2AA	1.29
11	Selma Parker	Parker	RA45C1-67 to RA45C1-48 Replace 6CU and 4CU with 2AA	0.60
12	Granger	#6	Reconductor 6 CU to 2-AA from JO0120000012 to JO012000009 and JO0120000006 to JO0120000001	0.23
13	Studebaker	Lark	Reconductor single phase to 2-2 AA, beyond JO283-699	0.15
14	Lusher	#2	Reconductor 4CU to 2-AA Beyond EL230000377	1.15
15	South Bend	No 2	Reconductor 4 AS from beyond JO0237000577 to 2 AA	0.51
16	Springville	New Buffalo	Reconductor 4 AS from LP0168000005 to LP0169000002	1.17
17	Lusher	#2	Reconductor 4AS beyond EL0253000021	0.76
18	Saint Joe	East	Reconductor 4AS DK453-1 to DK454-2	0.12
19	Robinson Park	Concordia	Reconductor 3PH 1/0 AL Spacer Cable with #2 AAAC from AL333-320 to AL333-78	0.26
20	Grabill	Antwerp	Reconductor 4 ACSR to 2 AA	1.90
21	Grabill	Antwerp	Reconductor 4 ACSR to 2 AA	1.42
22	Grabill	Antwerp	Reconductor 4 ACSR to 2 AA	1.00
23	Harlan	Notestine	Reconductor 6 CU to 2-AA AL256-161 to AL229-74	0.42
24	Harlan	Notestine	Reconductor 6 CU to 2-AA AL256-161 to AL229-74	0.90
25	Decatur	Union	Reconductor 6 CU to 2-AA AD0171000041 to AD0156000069	0.45
26	St. Joe	East	Reconductor 4AS DK453-1 to DK454-2	1.00
			Total	20.6
		Estimated O&M	$122,766	
		Estimated Capital	$1,823,335	

Indiana Michigan Power - Indiana Distribution Management Plan

Single Phase Line Rebuild 2020				
Map Reference Number	Station	Circuit	Description	Miles
1	East Side	Adams	Reconductor 4 Cu to 2AA beyond JO0260000330, E & W	0.36
2	New Carlisle	Hudson	Reconductor mixed 4 AS & 4 Cu to 2 AA from LP0176000113 to LP0176000145	0.62
3	Swanson	No 2	Reconductor 4 AS to 2- 2AA from JO0117000001 to CA0604000001	0.41
4	Lydick	Town	Reconductor 4 Cu to 2AA from JO0204000030 to JO0204000206 & JO0204000198	1.57
5	Harvest Park	Main St.	Reconductor 2 AAAC to 556AL & 4/0 AAAC Neutral. From DK0398000087 to DK0417000048	0.87
6	Harvest Park	Main St.	Reconductor 4 CU to #2 AAAC from AL0480000350 to AL0480000369	0.93
7	Woods Road	North	Reconductor 6 CU to #2 AAAC from NO0484000031 to DK0417000031	1.50
8	North Kendallville	Publix	Reconductor 6 CU to #2 AAAC from NO0192000039 to NO0144000039 & NO0144000024 to NO0144000027	2.47
9	Woods Road	North	Reconductor 6 CU to #2 AAAC from NO459-77 & NO459-11	1.33
10	Anthony	McMillen	Reconductor 4 CU to #2 AAAC from AL507-957 to AL507-262	0.02
11	Lincoln	Hartzel	Reconductor 4 CU to #2 AAAC from AL0481000248 to AL0481000269	1.59
12	Trier	West	Reconductor 4 CU to #2 AAAC from AL393-146 to AL392-222	0.05
13	Daleville	East	DE0085000024 - DE0084000172 Replace 6A CC with 2AA	0.39
14	Wes-Del	Harrison	DE0034000129 - DE0034000077 Replace 4 CU with 2AA	0.97
15	Mayfield	Selma	DE0068D10164 - DE0068C20373 Replace 4 AS with 2AA	0.20
16	Mayfield	Selma	DE0068D30170 - DE0068D30357 Replace 4 CU and 6 CU with 2AA	0.22
17	Mayfield	Selma	DE0068D10165 - DE0068D10296 Replace 6 CU with 2AA	0.09
18	Gatson	Gatson	DE23-245 to DE22-92 Replace 4AS with 2AA	0.67
19	Mayfield	Selma	DE0068D40412 - DE0068D40442 Replace 4 CU with 2AA	0.26
20	Wabash	South	BL36-54 to BL29-233 Replace 4AS with 2AA	0.78
21	Mayfield	Selma	DE0068A40542 - DE0068C20409, DE0068C20277 - DE0068C20288 Replace 4 CU with 2AA	0.79
22	Fairmont	Fowlerton	GR96-133 to GR85-111 Replace 4AS with 2AA	0.74
23	Deer Creek	West	GR0061A10012 - GR0061A10005 Replace 4 CU with 2AA	0.18
24	Farmland	Bears	RA57-172 to RA57-24 Replace 4AS with 2AA	1.05
25	Linwood	Linwood	MA0063000052 - MA0062000182 Replace 4 AS with 2AA	1.33
26	Peacock	Summitville	MA13-21 to MA13-3 Replace 6A CC and 4AS with 2AA	1.00
27	Deer Creek	West	GR0061A10048 - GR0061A10089, GR0061A10083 - GR0060C40029 Replace 4 CU and 4A CC with 2AA	0.60
28	Farmland	Plum	RA36-98 to GR36-69 Replace 4AS with 2AA	1.70
			Total	22.7
		Estimated O&M	$139,283	
		Estimated Capital	$1,920,611	

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Three Phase Line Rebuild 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	South Elwood	Excello	MA26B1-22 to MA26B1-410 Replace 4CU and 6A CC with 556AL	0.31
2	Walnut	Arcadia	DE76C1-145 Replace 4CU and 6A CC with 556AL	0.25
3	Winchester	Fountain Park	RA51B4-191 to RA51B4-173 Replace 4CU and 6A CC with 556AL	0.20
4	South Elwood	Excello	MA26B2-7 to MA26B1-12 Replace 4CU and 6A CC with 556AL	0.80
5	Jay	Redkey	JA81D2-17 to JA93-20 Replace 4CU and 6A CC with 556AL	0.11
6	Jay	Redkey	JA81D2-17 to JA93-20 Replace 4CU and 6A CC with 556AL	0.73
7	Anchor Hocking	Island	RA51B3-111 to RA51B3-85 Replace 4CU and 6A CC with 556AL	0.21
8	Mier	Sweetser	GR37-175 to GR25D4-7 Replace 1/0 CU with 556AL	1.13
9	Mier	Sweetser	GR25-43 to GR14-136 Replace 4CU & 1/0AS with 556AL	1.12
10	Jay	Redkey	JA81D2-17 to JA93-20 Replace 4CU and 6A CC with 556AL	1.46
11	Linwood	Frankton	MA43-15 to MA50-75 Replace 4CU with 556AL	0.89
12	Linwood	Frankton	MA43-15 to MA50-75 Replace 4CU with 556AL	0.89
13	Tillotson	Hospital	DE65D3-5 to DE65D3-189 Replace 6CU with 2AA	0.27
14	Fairmount	Fowlerton	GR96-134 TO GR96C2-11 Replace 4CU with 556AL	1.17
15	Fairmount	Fowlerton	GR96-134 TO GR96C2-11 Replace 4CU with 556AL	0.85
16	Farmland	Plum	RA47C1-21 to RA47A3-61 Replace 4CU & 6CU with 556AL	0.47
17	Elwood	Leisure	MA18-30 to MA10-248 Replace 4 CU with 556AL	1.03
18	Northland	#5	Reconductor 4 AA to 556 EL131-22 to EL132-25	1.10
19	Beech Rd	Dunn	Reconductor / Multiphase 4 AS to 556 AL from EL186-13 to EL186-251	0.70
20	Studebaker	Lark	Reconductor #6 Cu with 4-2AA beyond JO283-699	0.17
21	Springville	New Buffalo	Reconductor/Multiphase from LP0147000012 to LP0128000015	0.64
22	Swanson	#3	Reconductor/Multiphase 4 Cu with 4- 2AA from JO0166000010 to JO0142000260	0.42
23	East Side	Adams	Reconductor 4Cu to 2AA from JO0284000257 to JO0284000243	0.31
24	Darden	North	Reconductor 4AS to 2AA from JO115-138 to JO115-370	0.60
25	Northwest	#1	Reconductor 4AS to 4-2AA from EL0188000001 to EL0188000378	0.16
26	Whitaker	#3	Reconductor 3 phase from EL230-27 to EL230-641948 (800 ft); spacer cable	0.38
27	German	#2	Reconductor 4 Cu with 4- 2AA from JO0210000121 to JO0209000266 & JO0209000242	0.61
28	Darden	Auten	Reconductor 4AS to 2 AA (Maybe 556AL), beyond JO137-344	1.10
29	Darden	Auten	Multiphase/ reconductor 4AS & 2AA to 556 AL to St Ln; JO0112000015 to JO0112000093	0.38
30	Quinn	Lakeville	Multiphase/ reconductor 4AS to 4-2AA; JO0508000109 to JO0534000001	0.74
31	Quinn	Lakeville	Multiphase/ reconductor 4AS to 4-2AA; JO0508000109 to JO0534000002	0.66
32	Whitaker	#1	Reconductor/Mutiphase 4Cu with 2 AA from EL0248000068 to EL0248000087, move to 2020	0.70
33	Waynedale	Covington	Replace 4CU & 6CU with 556AL AL0531000043 to AL0532000629	1.16
34	Harvest Park	Main St.	Replace 4CU & 6CU with 556AL AL0480000175 to AL0480000456	0.30
35	Lincoln	Hartzell	Replace 4CU & 6CU with 556AL AL0481000190 to AL0481000303	0.64
			Total	22.7
		Estimated O&M	$176,343	
		Estimated Capital	$5,727,838	

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Three Phase Line Rebuild 2020				
Map Reference Number	Station	Circuit	Description	Miles
1	Silver Lake	Rolling Prarie	Reconductor 4 AS to 4 - 2 AA from LP0235000110 to LP0235000160	0.06
2	Silver Lake	Rolling Prarie	Reconductor 4 AS to 4 - 2 AA from LP0193000097 to LP0193000037	0.01
3	German	Hamburg	Reconductor 4 Cu to 2AA from JO0209000347 to JO0210000419	0.33
4	Cleveland	Park Forest	Reconductor 4 AS to 4 - 2 AA from EL0144000015 to EL0143000029	0.03
5	Springville	New Buffalo	Reconductor 4 CU to 556 AL from LP0145000064 to LP0144000028	0.71
6	Northwest	#2	Reconductor 4 Cu to 2AA from EL0189000022 to EL0189000003	0.66
7	Darden Road	Douglas	Reconductor 4 Cu to 2AA from JO0187000198 to JO0187000207	0.19
8	South Bend	#2	Reconductor 2-4 Cu & 2 - 2 AS to 4-2AA from JO0212000367 to JO0212000371	0.18
9	Lydick	Town	Reconductor 4 Cu to 556 AL from JO0252000440 to JO0276000012	0.93
10	Silver Lake	Rolling Prarie	Reconductor 4 AS to 4 - 2 AA from LP0235000111 to LP0235000065 and LP0235000038	0.67
11	Elcona	Country Club	Reconductor 4 Cu to 2 AA from EL0234000219 to EL0234000223	0.12
12	South Side	Broadway	Reconductor 4Cu from JO0283000758 to JO0283000875	1.08
13	Jackson	South Main	Reconductor 4AS from JO0373000058 to JO0373000061	0.14
14	Northwest	#2	Reconductor 4 AS from EL0189000009 to EL0189000850	0.3
15	Dunlap	River Manor	Reconductor 6A CC mix to 2AA from EL0277000009 to EL0277000036	0.33
16	Jackson	Roosevelt	Reconductor #4 Cu with 4-2 AA from JO0370000078 to JO0369000070	1.23
17	New Carlisle	Hudson	Reconductor/ mulitphase 4 AS to 2AA from JO0149000010 to JO0149000028	0.33
18	Elcona	Country Club	Reconductor 4 AS to 4 - 2 AA from EL0258000062 to EL0258000096	0.29
19	Silver Lake	Wirekraft	Reconductor 4 Cu with 4- 2AA from LP0237000006 to LP0258000047	0.13
20	Silver Lake	Rolling Prarie	Reconductor 4 Cu from to 4 - 2 AA LP0194000048 to LP0193000059 and LP0193000058 to LP0193000057	0.86
21	Lydick	Town	Reconductor 4 Cu to 2AA from JO0228000173 to JO0228000002	0.26
22	Decatur	Union	Reconductor Multi-Phase Rebuild from AL0752000003 to AL0779000038	1.04
23	State	Brentwood	Reconductor Spacer cable with 556AL & 4/0 AAAC Neutral from AL0422000634 to AL0422000662 W, & AL0422000662 to AL0422000658 S	0.3
24	Pettit Avenue	Belmont	Reconductor 6 CU to #2 AAAC from AL0563000241 to AL0563000242	0.02
25	Woodburn	Woodburn	Reconductor 4 CU to #2 AAAC from AL0376000001 to AL0375000128	0.64
26	Decatur	Root	Reconductor 4/0 CU to 556 AL & 4/0 AAAC Neutral from AD0183000167 to AD0183000204	0.48
27	North Kendallville	Village	Reconductor 4/0 CU & 2 CU neutral to 556 AL & 4/0 AAAC from NO0241000374 to NO0241000891	0.37
28	Magley	Preble	Reconductor Spacer cable with 556AL & 4/0 AAAC Neutral from AD0178000107 to AD0179000170	0.38
29	Hamilton	Hamilton	Reconductor 4/0 CU to 556 AL & 4/0 AAAC Neutral from ST0431000112 to ST0431000177	0.14
30	County Line	Tonkel	Reconductor 336 AL to 556AL From DK423-11 to DK381-20	1.03
31	St. Joe	West	Reconductor 336 AL to 556AL From DK430-3 to DK472-157	1.56
32	Indiana-Purdue University	College Park	Reconductor 336 AL to 556AL From AL420-335 to AL420-922	0.1
33	Woods Road	North	Reconductor 5CU to 556AL & 4/0 AAAC Neutral From DK0416000089 to NO0502000031	0.8
34	State	Brentwood	Reconductor Spacer cable with 556AL & 4/0 AAAC Neutral from AL0420001250 to AL0420001276	0.3
35	Clipper	Garrett	Reconductor 2 AAAC to 556AL & 4/0 AAAC Neutral. From DK0398000087 to DK0417000048	1.14
36	Butler	West	Reconductor 1 CU & 4CU to 556AL & 4/0 AAAC Neutral from DK0264000015 to DK0285000196	0.97
37	North Kendallville	Publix	Reconductor 6CU & 2-4ACSR to #2AAAC from NO0217000085 to NO0192000039	0.71
38	St. Joe	West	Reconductor 4 CU to #2 AAAC from DK0472000022 to DK0472000038	0.13
39	Hamilton	Hamilton	Reconductor 4 CU to #2 AAAC from ST410-172 to ST410-18	0.21
40	Kingsland	Tocsin	Reconductor 6CU & 2-4ACSR to #2AAAC from WE0194000014 to WE0195000056	1.46

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41	Kingsland	Tocsin	Reconductor 6CU & 2-4ACSR to #2AAAC from WE0195000056 to WE0196000080	1.39
42	Mayfield	Selma	DE0068D40412 - DE0068D40442 Replace 4 CU with 2AA	0.03
43	Jay	Millgrove	JA0067D20008 - JA0079A10015 Replace 4 CU with 2AA	0.1
44	Jay	Millgrove	JA0067D30185 - JA0067D30223 Replace 4 CU with 2AA	0.12
45	Van Buren	Van Buren	GR0021C10053 - GR0021C10030 Replace 4 CU and 6 CU with 556 AL	0.24
46	Daleville	East	DE0094000066 to DE0095000007 Replace 6A CC with 2AA	0.14
47	Mayfield	Selma	DE0068A40542 - DE0068C20409, DE0068C20277 - DE0068C20288 Replace 4 CU with 2AA	0.29
48	Albany	Albany	RA0002000092 - RA0002000057 Replace 4 AS with 2AA	0.13
49	Linwood	Linwood	MA0055000100 - MA0063A10027 Replace 4 AS with 2AA	0.3
50	Linwood	Linwood	MA0054D20032 - MA0054000082 Replace 4 AS with 2AA	0.14
51	Blaine Street	Luick Avenue	DE0087000060 - DE0088000052 Replace 4 AS and 4 CU with 2AA	0.71
52	Daleville	East	DE0085000024 - DE0084000172 Replace 6A CC with 2AA	0.72
53	Selma Parker	Parker	RA23-75 to RA23-38 Replace 4CU and 2CU with 556AL	1.45
54	Fairmont	West	GR0080000014 - GR0091000019 Replace 6A CC and 4 AS with 2AA	1.53
55	Mayfield	Selma	DE0068D30170 - DE0068D30357 Replace 4 CU and 6 CU with 2AA	0.03
56	Blaine Street	Luick Avenue	DE0087000060 - DE0088000052 Replace 4 AS and 4 CU with 2AA	0.25
57	Rosehill	Rosehill	MA0062B20063 - MA0062B20086 Replace 4 AS with 2AA	0.25
58	Dooville	Farrville	GR43-35 to GR32-174 Replace 1/0 AS with 556AL	1.2
59	Daleville	East	DE0103000026 - DE0104000042 Replace 4 CU & 4 AS with 2AA	0.73
60	Linwood	Linwood	MA0054000227 - MA0054000232 Replace 4 AS with 2AA	0.26
61	Jay	Millgrove	JA0067D30027 - JA0067D30015 Replace 4 CU with 2AA	0.17
			Total	30.8
		Estimated O&M	$246,877	
		Estimated Capital	$7,731,945	

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Voltage Conversion 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.21
2	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.16
3	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.14
4	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.14
5	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.61
6	Harrison	#2-4 kV	Convert from 4kV to 12 kV	0.27
7	Hydro	#2 -12 kV	Convert from 4kV to 12 kV beyond EL211-1384	0.31
			Total	1.8
		Estimated O&M	$55,072	
		Estimated Capital	$533,713	

Voltage Conversion 2020				
Map Reference Number	Station	Circuit	Description	Miles
1	McClure	Industrial	Convert from 4kV to 12 kV GR39B3-6 to GR39B1-82	1.60
2	Jobes	South	Convert from 4kV to 12 kV	0.70
3	Jobes	South	Convert from 4kV to 12 kV	0.67
4	Jobes	South	Convert from 4kV to 12 kV	0.65
5	Jobes	South	Convert from 4kV to 12 kV	0.17
			Total	3.8
		Estimated O&M	$116,840	
		Estimated Capital	$1,065,785	

Circuit Ties 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	Hogan	River Road	DE61-41 to MA56-18 Replace 2 CU with 556 AL	0.94
2	Anchor Hocking	Island	RA51B1-68 to RA51A4-24 Install 556AL to make tie.	0.60
3	Mier	Sweetser	RA106-67 to RA106-22 Install 556AL to make tie.	1.07
4	Mier	Sweetser	GR25D2-61 to GR25D4-7 Replace 2 CU with 556 AL	0.73
5	Dooville	Farrville	GR43-32 to GR44-21 Rebuild 1 Ph to 3 Ph 556AL	1.11
6	Dooville	Farrville	GR44-21 to GR44-98 Rebuild 1 Ph to 3 Ph 556AL	0.91
7	S. Elwood	Excello	MA26B1-410 to MA26B1-296 Build new 360' & Replace 1/0 CU	0.23
8	Hogan	River Road	DE63-1658 to DE63-376 Install 556AL to make tie.	0.27
9	County Line	Tonkel	Reconductor to 556AL from DK444-99 to DK464-158	1.48
10	County Line	Tonkel	Reconductor to 556AL from DK421-36 to DK400-10	0.95
11	County Line	Tonkel	Reconductor to 556AL from DK421-2 to DK398-87	1.50
12	County Line	Tonkel	Reconductor to 556AL from DK421-2 to DK398-87	1.50
13	Kankakee	Olive	Reconductor to 556AL from JO0302000009 to JO0324000005	0.70
14	Granger	#2	Reconductor to 556AL from JO0145000211	0.11
15	Whitaker	#3	Reconductor to 556AL from EL0230001048	0.95
16	Lusher	#2	Reconductor to 556AL from EL0231000819	0.53
17	Lydick	Town	Relocate OH line to Road using 556 AL, from JO0205000026 to JO0229000009	0.25
			Total	13.8
		Estimated O&M	$90,539	
		Estimated Capital	$2,755,150	

Circuit Ties 2020				
Map Reference Number	Station	Circuit	Description	Miles
			Total	0.0
		Estimated O&M	$0	
		Estimated Capital	$0	

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Sectionalizing 2019			
Station	Circuit	Description	Units
Haymond	Whitely	Review and modify sectionalizing on circuit	1
Deer Creek	West	Review and modify sectionalizing on circuit	1
Deer Creek	North	Review and modify sectionalizing on circuit	1
Aladdin	Tiger	Review and modify sectionalizing on circuit	1
Springville	Toll Rd	Review and modify sectionalizing on circuit	1
Darden	East	Review and modify sectionalizing on circuit	1
South Side	Wildcat	Review and modify sectionalizing on circuit	1
Butler	City	Review and modify sectionalizing on circuit	1
Hadley	Flaugh	Review and modify sectionalizing on circuit	1
IU-Purdue	Marketplace	Review and modify sectionalizing on circuit	1
Daleville	Yorktown	Review and modify sectionalizing on circuit	1
		Total	11
	Estimated O&M	$3,509	
	Estimated Capital	$445,028	

Sectionalizing 2020			
Station	Circuit	Description	Units
Lydick	Town	Review and modify sectionalizing on circuit	1
Lydick	Country Club	Review and modify sectionalizing on circuit	1
Cleveland	Park Forest	Review and modify sectionalizing on circuit	1
Hamilton	Hamilton	Review and modify sectionalizing on circuit	1
Robison Park	Dupont	Review and modify sectionalizing on circuit	1
Magley	Preble	Review and modify sectionalizing on circuit	1
Wabash	South	Review and modify sectionalizing on circuit	1
Hartford City	South	Review and modify sectionalizing on circuit	1
Aladdin	Yule	Review and modify sectionalizing on circuit	1
Rose Hill	Rose Hill	Review and modify sectionalizing on circuit	1
		Total	10
Rose Hill	Rose Hill	Review and modify sectionalizing on circuit	1
		Total	10
	Estimated O&M	$3,285	
	Estimated Capital	$400,536	

Recloser Replacement 2019			
Station	Circuit	Description	Units
Lynn	Lynn	RA0096000009 Replace 3 - 100 V4L	3
Rock Creek	Buckeye	HU0061000003 Replace 1 - 70 V4H	1
Rock Creek	Buckeye	HU0068000109 Replace 1 - 50 V4H	1
Rock Creek	Buckeye	HU0069C30052 Replace 1 - 70 V4H	2
Upland	North	GR0065000204 Replace 1 - 100 V4H	1
South Elwood	Country Club	HA0019000089 Replace 1 - 50 V4H	1
South Elwood	Country Club	TI0070000046 Replace 1 - 50 V4H	1
Farmland	Bears	RA0068000008 Replace 2 - 70 V4H	2
Gaston	Matthews	GR0108000061 Replace 1 - 100 V4H	1
Hummel Creek	West	GR0005000409 Replace 1 - 100 V4L	1
Linwood	Linwood	MA0044000139 Replace 1 - 100 V4L	1
Mier	Sweetser	GR0003000127 Replace 1 - 70 V4H	1
Mier	Sweetser	GR0003000263 Replace 1 - 70 V4H	1
Mier	Sweetser	GR0012000205 Replace 1 - 70 V4H	1
Mier	Sweetser	GR0012000096 Replace 1 - 100 V4H	1
Twenty First St	Cowan	DE0106000051 Replace 1 - 70 4H	1
Hummel Creek	South	GR0028B30118 Replace 2 - 140 V4L	2
Fairmount	West Eighth	GR0080000016 Replace 1 - 100 V4H	1
Drewrys	Brookfield	JO0233000246 Replace 1 - 100 V4L	1
Beech Road	Bittersweet	JO0219000017 Replace 1 - 200 V4L	1
Darden Road	Lilac	JO0162000069 Replace 1 - 200 V4L	1
East Side	Wilson	JO0236000402 Replace 2 - 200 V4L	2
East Side	Wilson	JO0236001291 Replace 1 - 200 V4L	1
Jackson Road	South Main	JO0348000058 Replace 1 - 560 VXE15	1
East Side	Wilson	JO0236001291 Replace 1 - 200 V4L	1
Jackson Road	South Main	JO0348000058 Replace 1 - 560 VXE15	1
Beech Road	Dunn	EL0206000420 Replace 1 - 140 V4L	1
Twin Branch	#1	JO0290000093 Replace 2 - 140 V4L	2
East Side	Wilson	JO0236000370 Replace 1 - 200 V4L	1
East Side	Wilson	JO0236001294 Replace 3 - 200 V4L	3
East Side	Wilson	JO0260000016 Replace 1 - 200 V4L	1
Ireland Road	#3	JO0371000380 Replace 1 - 140 V4L	1
Ireland Road	#3	JO0372000009 Replace 1 - 140 V4L	1
Ireland Road	#3	JO0372000016 Replace 1 - 140 V4L	1
Ireland Road	#3	JO0393000031 Replace 1 - 100 V4H	1
Ireland Road	#3	JO0394000035 Replace 1 - 100 V4H	1
Ireland Road	#3	JO0416000014 Replace 1 - 100 V4H	1
Pine	Landmark	JO0134000183 Replace 1 - 140 V4L	1
		Total	45
	Estimated O&M	$1,013	
	Estimated Capital	$283,438	

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Recloser Replacement 2020			
Station	Circuit	Description	Units
Greenleaf	North	EL0193000026 Replace 1 - 140 V4L	1
Countryside	Jimtown	EL0314000001 Replace 1 - 140 V4L	1
Darden Road	Lilac	JO0162000088 Replace 1 - 100 V4L	1
Pleasant	Yoder	AL0764000050 Replace 1 - 140 V4L	1
Waynedale	Lakewood	AL0532000342 Replace 1 - 200 V4L	1
Adams	Linn Grove	WE0370000001 Replace 1 - 70 V4L	1
Ellison Road	Aboite	AL0584000071 Replace 1 - 100 L	1
Hadley	Hickory Pointe	AL0414000045 Replace 1 - 200 L	1
Harlan	Notestine	AL0286000016 Replace 1 - 100 V4L	1
Hillcrest	Southtown #1	AL0593000182 Replace 1 - 280 V4L	1
Hillcrest	Ventura	AL0536000997 Replace 1 - 200 V4L	1
Input	College Park	AL0391000533 Replace 1 - 200 V4L	1
Trier	West	AL0393000136 Replace 1 - 280 V4L	1
Woods Road	North	DK0458000002 Replace 1 - 140 L	1
Reed	Bohde	AL0336000598 Replace 1 - 280 V4L	1
Hummel Creek	West	GR0027C20470 Replace 1 - 100 V4H	1
Daleville	East	DE0103000024 Replace 1 - 100 V4H	1
Hartford City	North	BL0017000008 Replace 1 - 70 V4H	1
Hummel Creek	South	GR0017D00125 Replace 1 - 140 V4L	1
Hummel Creek	South	GR0017D00076 Replace 1 - 140 V4L	1
Hummel Creek	South	GR0017D00151 Replace 1 - 140 L	1
Daleville	Daleville	DE0082B10364 Replace 1 - 100 V4L	1
Hogan	River Road	DE0061000030 Replace 1 - 70 4H	1
Hogan	River Road	DE0062000125 Replace 1 - 100 V4H	1
Hogan	River Road	DE0062000264 Replace 1 - 100 V4H	1
Fairmount	West Eighth St.	GR0083D20009 Replace 1 - 140 V4L	1
Twenty First St	Cowan	DE0086000507 Replace 1 - 140 V4L	1
Daleville	East	DE0085000106 Replace 1 - 100 V4L	1
Hummel Creek	South	GR0007000028 Replace 1 - 100 V4L	1
Rose Hill	Rose Hill	MA0067000052 Replace 1 - 140 V4L	1
Gaston	Gaston	DE0023A30042 Replace 1 - 140 V4L	1
Gaston	Gaston	DE0023C20060 Replace 1 - 140 V4L	1
Twenty First St	Cowan	DE0106000046 Replace 1 - 100 V4L	1
Daleville	East	DE0084000063 Replace 1 - 100 L	1
Farmland	Wildcat	RA0036000030 Replace 1 - 140 V4L	1
Farmland	Wildcat	RA0036000098 Replace 1 - 140 V4L	1
Jay	Redkey	JA0083000001 Replace 1 - 70 V4H	1
Montpelier	Roll	BL0001000097 Replace 1 - 70 V4H	1
Farmland	Bears	RA0057000003 Replace 1 - 100 V4H	1
		Total	39
	Estimated O&M	$897	
	Estimated Capital	$253,026	

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Capacitor Replacement 2019			
Station	Circuit	Description	Units
Gas City	Jonesboro	GR72C3-85 - 450 F	1
Upland	South	GR76-152 - 900 SW	1
Van Buren	Van Buren	GR21A4-114 - 450 SW	1
West End	South	GR38C4-64 - 900 SW	1
21st Street	Hackley	DE76C1-183 - 450 SW	1
Cross Street	Chesterfield	DE91A3-135 - 450 SW	1
Linwood	Linwood	MA54B3-5 - 900 SW	1
Mcgalliard	Morningside	DE56C4-56 - 900 SW	1
Randolph	Jackson Pike	RA44-182 - 450 SW	1
Winchester	Saratoga	RA51-128 - 900 SW	1
Hummel Creek	West	GR16D1-82 450 SW	1
Montpelier	East	WE88-76 450 SW	1
Hartford City	North	BL24-266 450 SW	1
Cleveland	Memorial	EL0187000217 - 600 SW	1
Concord	#4	EL0251000813 - 900 SW	1
County Road 4	Airport	EL0146000223 - 600 SW	1
Lusher	#2	EL0231000331 600 SW	1
Northwest	#2	EL0210000212 - 600 SW	1
Whitaker	#2	EL0208000207 - 900 SW	1
Drewrys	Diamond	JO0234000649 - 900 SW	1
Granger	#1	JO0122000103 - 600 SW	1
Ireland Road	#2	JO0328000026 - 600 SW	1
Darden	Douglas	JO0187000555 - 900 SW	1
Pine	Landmark	JO0158000158 - 900 SW	1
Decatur	Root	AD0168000058 - 900 SW	1
Decatur	Krick	AD0198000059 - 450 SW	1
Muldoon Mills	Hoagland	AL0716000068 - 900 F	1
Ferguson	Brookwood	AL0590000540 - 900 SW	1
Pleasant	Yoder	AL0762000014 - 600 F	1
Reed	Bohde	AL0335001076 - 450 F	1
Albion	City	NO0329000059 - 900 SW	1
Hillcrest	Ventura	AL0564000957 - 600 SW	1
Summit	Salomon	AL0330000416 - 900 SW	1
Wayne Trace	Paulding	AL0537000678 - 900 SW	1
		Total	34
	Estimated O&M	$119	
	Estimated Capital	$589,191	

Capacitor Replacement 2020			
Station	Circuit	Description	Units
Cleveland	Memorial	EL0187000042 - 900 SW	1
Cleveland	Memorial	EL0165000009 - 900 SW	1
Twin Branch	#1	JO0290000177 - 450 SW	1
Twin Branch	#1	JO0291000409 - 900 SW	1
Darden Road	Lilac	JO0161000175 - 900 SW	1
Jackson Road	Scottsdale	JO0327000013 - 900 SW	1
Jackson Road	Scottsdale	JO0328000249 - 900 SW	1
Jackson Road	Scottsdale	JO0327000741 - 900 SW	1
Kankakee	Olive	JO0281000108 - 900 SW	1
Twin Branch	#3	JO0375000010 - 450 SW	1
Colony Bay	Copper Hill	AL0470000092 - 450 SW	1
Berne	Parr	AD0357000162 - 900 SW	1
Decatur	Krick	AD0182000251 - 900 SW	1
Anthony	Tokheim	AL0478001313 - 450 SW	1
Anthony	Tokheim	AL0478001485 - 450 SW	1
Anthony	Wallace	AL0477001488 - 900 SW	1
Fulton	Bloomingdale	AL0447001727 - 900 SW	1
Hillcrest	Southtown 2	AL0564001016 - 450 SW	1
Industrial Park	Summit	AL0359000909 - 900 SW	1
Mayfield	Selma	DE69D1-14 900 SW	1
21st Street	Arcadia	DE76C2-80 450 SW	1
21st Street	Cowan	DE76D2-113 900 F	1
Linwood	Linwood	MA54B3-5 900 SW	1
Mayfield	Springwater	DE67D1-152 900 SW	1
Portland	East	JA62-193 900 SW	1
Hummel Creek	South	GR50B2-163 900 SW	1
		Total	26
	Estimated O&M	$91	
	Estimated Capital	$348,970	

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Porcelain Cutout & Arrester Replacement 2019			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace porcelain cutouts and arresters	1,592
Various - Ft. Wayne	Various	Replace porcelain cutouts and arresters	1,605
Various - S. Bend	Various	Replace porcelain cutouts and arresters	1,974
		Total	5,171
	Estimated O&M	$31,024	
	Estimated Capital	$1,538,684	

Porcelain Cutout & Arrester Replacement 2020			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace porcelain cutouts and arresters	1,310
Various - Ft. Wayne	Various	Replace porcelain cutouts and arresters	1,329
Various - S. Bend	Various	Replace porcelain cutouts and arresters	1,683
		Total	4,322
	Estimated O&M	$28,093	
	Estimated Capital	$1,124,829	

Crossarm Replacement 2019			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	158
Various - Ft. Wayne	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	348
Various - S. Bend	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	201
		Total	706
	Estimated O&M	$43,084	
	Estimated Capital	$685,572	

Crossarm Replacement 2020			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	42
Various - Ft. Wayne	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	252
Various - S. Bend	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	84
		Total	379
	Estimated O&M	$23,866	
	Estimated Capital	$235,227	

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URD Cable Replacement 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	Deer Creek	West	GR61A1-62 to GR61A1-64	0.06
2	Hartford City	North	BL24-386 to BL24-387	0.03
3	Tillotson	Hospital	DE65C4-189 to DE65C4-211	0.05
4	Utica	Forest Park	DE65D2-19 to DE65D2-248	0.05
5	21st Street	Cowan	DE96A4-179 to DE96A4-192	0.03
6	Gaston	Matthews	GR109A3-71 to GR109A3-72	0.05
7	Gas City	East	GR62-327 to GR62-348	0.13
8	Portland	East	JA51-42 to JA51-76	0.08
9	Selma Parker	Wapahani	DE79-265 to DE79-502	0.06
10	Deer Creek	West	GR60-360 to GR60-361	0.04
11	Jay	Redkey	JA81A4-124 to JA81A4-132	0.03
12	Peacock	Summitville	MA15A4-226 to MA15A4-227	0.06
13	Daleville	Daleville	DE92A1-145 to DE92A1-143	0.08
14	Hummel Creek	West	GR16A1-16 to GR16A1-601PD and GR16A1-15 to GR16A1-40	0.30
15	Royerton	Riggin Road	DE37-398	0.16
16	Anchor Hocking	Island	RA51D1-294 to RA51D1-296	0.05
17	Hogan	Morrison	DE64D3-594 to DE64D3-1049PD and DE64D3-1048PD to DE64D3-46PD.	0.43
18	Hogan	Morrison	DE64D3-590 to DE64D3-593	0.25
19	Deer Creek	East	GR51A3-117 to GR51A3-42	0.04
20	Deer Creek	East	GR51A3-45 to GR51A3-47	0.04
21	Randolph	Chestnut	RA55C1-30 to RA55C1-56PD	0.30
22	Hummel Creek	South	GR28A4-90 to GR28A2-137 and GR28A4-87 to GR28A2-136	0.14
23	Randolph	Chestnut	RA55C3-63 to RA55C3-87PD	0.10
24	Randolph	Jackson Pike	RA44C4-113 to RA44C4-122PD, RA44C4-123PD to RA44C4-140PD	0.20
25	Wesdel	Farmington	DE45B4-71 to DE55A3-4	0.54
26	Gaston	Gaston	DE23C1-91	0.02
27	South Side	East	GR50C4-247	0.02
28	Lantern Park	Nebo	DE54C2-37	0.02
29	Hogan	Cammack	DE0064A01102	0.33
30	Hacienda	Arlington	Risers AL336-189 & AL366-187	1.71
31	Hacienda	Arlington	Risers AL336-195 & AL366-196	1.50
32	Hacienda	Arlington	Risers AL366-433 & AL366-435	1.55
33	Hacienda	Hartford	Risers AL393-487 & AL393-589	0.42
34	State Street	Lahmeyer	Risers AL423-452 & AL394-644	1.03
35	Osolo	No 1	EL0147000411	0.04
36	Osolo	No 1	EL0147000412	0.09
37	Osolo	No 1	EL0147000436	0.10
38	Osolo	No 3	EL0169000283	0.08
39	South Bend	No 2	JO0213000904 to JO0213000911	0.11
40	Swanson	No 1	JO0164000043 to JO0164000524	0.10
41	Lusher Avenue	No 1	EL0232001264 to EL0232001271	0.05
42	Darden Road	East	JO0163000964 to JO0163000972	0.07
43	Conant	No 2	EL0213000643	0.04
44	Darden Road	North	JO0163000148 to JO0163001112	0.09
45	Dunlap	No 3	EL0253000024 to EL0253000846	0.18
46	Dunlap	No 1	UGR EL0253000696 & EL0253000758	0.07
47	Jackson Road	Michigan Street	JO0305001193; includes 1 - 3 phase Live Front transformer	0.04
48	German	No 3	JO0184000275; includes 1 - 3 phase Live Front transformer	0.04
49	Jackson Road	Lafayette	JO0327000814; 1 - 3 phase Live Front Transformer only	0.04
50	Colfax	No 3	JO0259002596; 1 - 3 phase Live Front Transformer only	0.04
51	West Side	No 2	JO0255000781; 1 - 3 phase Live Front Transformer only	0.04
52	Lydick	Ardmore	JO0208000543; includes 1 - 3 phase Live Front transformer	0.05
53	Springville	Toll Rd	LP0228000151; includes 1 - 3 phase Live Front transformer	0.07
54	Elkhart Hydro	No 1	UGR EL0211000957 & EL0211000965	0.13
55	Lusher	No 2	UGR EL0253000902 & EL0253000466	0.46
56	East Side	Adams	JO0284001689 with 3 Ph LF XF	0.02
57	East Side	Park Jeff	JO0261001317 with 3 Ph LF XF	0.13
58	East Side	Wilson	JO0260001402 with 3 Ph LF XF	0.03
59	East Side	Wilson	JO0260001316 with 3 Ph LF XF	0.09
60	Pine Road	South	JO0207000499 1 Ph LF XF	0.00
61	Ireland	#4	UGR JO0329000320 to JO0329000361	0.28
62	German	Hamburg	UGR JO0185000304 to UGR JO0185000387	0.60
63	West Side	#2	UGR JO0279000003 to JO0279000270	0.87
64	East Side	Ironwood	UGR JO0329000051 to JO0329000361	0.58
			Total	14.4
		Estimated O&M	$108,148	
		Estimated Capital	$3,932,748	

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URD Cable Replacement 2020				
Map Reference Number	Station	Circuit	Description	Miles
1	Ireland	#4	UGR JO0329000320 to JO0329000361	0.28
2	German	Hamburg	UGR JO0185000304 to UGR JO0185000387	0.60
3	East Side	Ironwood	UGR JO0329000047 to JO0329000363	0.39
4	West Side	#2	UGR JO0279000003 to JO0279000270	0.87
5	East Side/Ireland	Ironwood/ #4	UGR JO0329000051 to JO0329000361	0.58
6	Lydick	Town	UGR JO0228000261 to padmount JO0228000276	0.02
7	Swanson	#2	UGR JO0119000053 & JO0119000010	0.44
8	County Road 4	Garver Lake	UGR EL0146000246 to UGR EL0146000282	0.24
9	Dunlap	River Manor	UGR EL0298000091 to padmount EL0298000122	0.07
10	Beech	Dunn	UGR EL0186000137 to UGR EL0186000136	0.72
11	New Carlisle	Trail	UGR JO0151000046 to UGR JO06221000040	0.09
12	Cleveland	Park Forest	UGR JO0148000114 to UGR JO0148000113	0.60
13	Hacienda	Hartford	Risers AL393-598 & AL393-599	0.19
14	State Street	Trier	Risers AL422-546 & AL422-11	0.27
15	State Street	Lahmeyer	Risers AL423-452 & AL394-644	0.57
16	Hillcrest	Ventura	Risers AL565-438 & AL565-378	0.18
17	Hamilton	Hamilton	Risers ST431-219 & ST431-197	0.23
18	Hillcrest	Ventura	AL565-456 & AL565-380	0.23
19	Hamilton	Factory	Riser ST429-71 and LF transformer ST429-72	0.12
20	Colony Bay	Colony	LF Transformers: AL0501000422	0.01
21	Thomas Road	Parkwest	LF Transformers: AL0444000289	0.24
22	State St.	Brentwood	LF Transformers: AL0422000459	0.02
23	Hacienda	Hartford	LF Transformers: AL0365000741	0.04
24	Parnell	Northcrest	LF Transformers: AL0361000920	0.03
25	Colony Bay	Colony	LF Transformers: AL0501000619	0.04
26	Hadley	Flaugh	LF Transformers: AL0387000351	0.03
27	Parnell	Northcrest	LF Transformers: AL0390001425	0.04
28	Hadley	Sutton	LF Transformers: AL0472000526	0.04
29	Industrial Park	Summit	LF Transformers: AL0359000742	0.04
30	South Decatur	Gage	LF Transformers: AD0214000123	0.04
31	Aviation	Warthog	LF Transformers: AL0647000111	0.05
32	Parnell	University	LF Transformers: AL0391000526	0.05
33	Parnell	Coliseum	LF Transformers: AL0390000775	0.05
34	Butler	West	LF Transformers: DK0243000253	0.06
35	Trier	Walden	LF Transformers: AL0394000609, AL0394000613, AL0394000615, AL0394000618, & AL0394000640	0.37
36	Reed	Brookside	LF Transformers: AL0335000664	0.59
37	Trier	Walden	LF Transformers: AL0423000543, AL0423000544, AL0423000558, & AL0423000561	0.42
38	State St.	Lahmeyer	LF Transformers: AL0423000365, AL0423000368, AL0423000370, AL0423000372	0.36
39	Thomas Road	Parkwest	LF Transformers: AL0473000661 & AL0473000662	0.24
40	Diebold Road	Martin	LF Transformers: AL0247000060	0.09
41	State St.	Lahmeyer	LF Transformers: AL0394000651, AL0394000654, AL0394000657, AL0394000662, AL0423000395, & AL0423000398	0.59
42	Hillcrest	Southtown #2	LF Transformers: AL0593000272	0.10
43	Hillcrest	Dunbar	LF Transformers: AL0534000930	0.30
44	Woodburn	Woodburn	LF Transformers: AL375-258 and AL375-261	0.41
45	Hadley	Sutton	LF Transformers: AL0472000538	0.12
46	Hacienda	Hartford	LF Transformers: AL0365000681	0.55
47	Aviation	Apache	LF Transformer: AL0590000659 & AL0590000660	0.25
48	Hacienda	Maplewood	LF Transformer: AL394-451	0.35
49	Cross Street	Chesterfield	MA80A4-309 to MA80A4-311PD	0.06
50	Upland	South	GR76D2-114 to GR76D2-68	0.02
51	Grant	North	GR27D4-266 to GR27D4-267	0.27
52	Marion Plant	North	GR39C3-218 to GR39C4-93	0.10
53	Grant	Sweetser	GR38C1-324 to GR38C1-323PD and GR38C1-322PD to GR38C1-318PD	0.30
54	Haymond	Jefferson	DE57B2-29 to DE57B2-10	0.58
55	Blaine	Luick	DE67B1-34 to DE67B3-19PD	0.23
56	Upland	South	GR76D2-37 to GR76D2-217	0.31
57	Tillotson	Jackson	DE0065D10007 to DE0065D10411	0.02
58	Blaine	Luick	DE0077B10051 to DE0077B10118	0.05
59	Randolph	Chestnut	RA55C1-60PD to RA55C1-74PD	0.15
60	Blaine	Luick	DE0077B10043 to DE0077B10108	0.03
61	Tillotson	Hospital	DE0065D30052 to DE0065D30269	0.02
62	Blaine	Luick	DE0077B10079 to DE0077B10111	0.08
63	Lantern Park	Petty	DE55B4-90PD to DE55B4-106PD	0.42
			Total	14.9
		Estimated O&M	$114,802	
		Estimated Capital	$4,147,322	

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Underground Station Exit Cable Replacement 2019				
Map Reference Number	Station	Circuit	Description	Feet
1	Ossian	Mill	Replace w/ 1000 MCM AL with 6" CDT	172
2	Trier	West	Replace w/ 1000 MCM AL with 6" CDT	300
3	Summit	Innovation	Replace w/ 1000 MCM AL with 6" CDT	560
4	Summit	Ludwig	Replace w/ 1000 MCM AL with 6" CDT	1,213
5	Ferguson	Airport Drive	Replace w/ 1000 MCM AL with 6" CDT	663
6	Ligonier	Grant	Replace w/ 1000 MCM AL with 6" CDT	58
7	Ligonier	Kimmell	Replace w/ 1000 MCM AL with 6" CDT	58
8	Ligonier	Gerber Street	Replace w/ 1000 MCM AL with 6" CDT	78
9	German	#4	Replace w/ 1000 MCM AL with 6" CDT	450
10	German	#5	Replace w/ 1000 MCM AL with 6" CDT	430
11	Concord	#5	Replace w/ 1000 MCM AL with 6" CDT	470
12	Concord	#4	Replace w/ 1000 MCM AL with 6" CDT	290
13	Dunlap	#3	Replace w/ 1000 MCM AL with 6" CDT	200
14	Dunlap	#4	Replace w/ 1000 MCM AL with 6" CDT	470
			Total	5,412
		Estimated O&M	$2,706	
		Estimated Capital	$892,135	

Underground Station Exit Cable Replacement 2020				
Map Reference Number	Station	Circuit	Description	Feet
1	German	Audi	Replace w/ 1000 MCM AL with 6" CDT	434
2	German	Munich	Replace w/ 1000 MCM AL with 6" CDT	1,210
3	South Side	Wildcat	Replace w/ 1000 MCM AL with 6" CDT	280
4	South Side	Broadway	Replace w/ 1000 MCM AL with 6" CDT	220
5	South Side	Main St	Replace w/ 1000 MCM AL with 6" CDT	160
6	South Bend	#3	Replace w/ 1000 MCM AL with 6" CDT	150
7	Summit	Huguenard	Replace w/ 1000 MCM AL with 6" CDT	525
8	Summit	Chalfant	Replace w/ 1000 MCM AL with 6" CDT	665
9	Ligonier	Cavin Street	Replace w/ 1000 MCM AL with 6" CDT	328
10	Industrial Park	Summit	Replace w/ 1000 MCM AL with 6" CDT	705
11	Reed	Bohde	Replace w/ 1000 MCM AL with 6" CDT	275
			Total	4,952
		Estimated O&M	$2,476	
		Estimated Capital	$827,997	

UG Network Rebuild Program 2019			
Station	Circuit	Description	Units
Elkhart Network	Various	Replace primary and secondary cable	5.1
Ft. Wayne Network	Various	Replace primary and secondary cable	1.5
South Bend Network	Various	Replace primary and secondary cable	9.6
		Total	16.2
	Estimated Capital	$10,592,125	

UG Network Rebuild Program 2020			
Station	Circuit	Description	Units
Ft. Wayne Network	Various	Replace primary and secondary cable	5.2
		Total	5.2
	Estimated Capital	$8,371,076	

Pole Replacement 2019			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated poles identified from the pole inspection program	1,213
Various - Ft. Wayne	Various	Replace deteriorated poles identified from the pole inspection program	787
Various - S. Bend	Various	Replace deteriorated poles identified from the pole inspection program	438
		Total	2,438
	Estimated O&M	$371,831	
	Estimated Capital	$4,767,105	

Pole Replacement 2020			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated poles identified from the pole inspection program	1,084
Various - Ft. Wayne	Various	Replace deteriorated poles identified from the pole inspection program	685
Various - S. Bend	Various	Replace deteriorated poles identified from the pole inspection program	352
		Total	2,122
	Estimated O&M	$333,098	
	Estimated Capital	$4,090,273	

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Distribution Feeder Breaker Replacement 2019		
Station	Description	Units
South Decatur	Replace obsolete PR 560 feeder breakers	2
Grant	Replace obsolete PR 560 feeder breakers	2
Conant	Replace obsolete PR 560 feeder breakers	2
Concord	Replace obsolete PR 560 & ES 560 feeder breakers	2
Granger	Replace obsolete PR 560 feeder breakers	2
West Side	Replace obsolete PR 560 feeder breaker	1
Mayfield	Replace obsolete PR 560 feeder breakers	2
Portland	Replace obsolete FDK feeder breakers	2
Parnell	Replace obsolete PR 560 feeder breakers	3
	Total	18
Estimated Capital	$5,425,351	

Distribution Feeder Breaker Replacement 2020		
Station	Description	Units
South Elwood	Replace obsolete WE feeder breakers	2
Jay	Replace obsolete WE feeder breakers	2
McGalliard Rd	Replace obsolete PRM feeder breakers	4
Van Buren	Replace obsolete PR 560 feeder breakers	2
Deer Creek	Replace obsolete PR 560 feeder breakers	1
Randolph	Replace obsolete PRM feeder breakers	4
Industrial Park	Replace obsolete PR 560 feeder breakers	2
Kingsland	Replace obsolete PR 560 feeder breakers	2
Marion Plant	Replace obsolete PR 560 feeder breakers	3
Ireland Road	Replace obsolete PR 560 feeder breakers	1
	Total	23
Estimated Capital	$4,612,319	

Major Projects 2019			
Map Reference Number	Station	Description	Estimated Capital Cost
1	Bosserman-New Carlisle	Convert three stations from 34.5kV to 138kV. Add four feeders.	$9,682,000
2	Colfax Station	Construct a new station with two feeders	$347,000
3	Elkhart Area Network	Rebuild existing obsolete station and two feeders	$6,170,000
4	Liberty Center Station	Rebuild existing station with two feeders.	$959,000
5	Limberlost Station	Construct a new station with two feeders	$2,381,000
6	Montpelier Underbuild	Rebuild 0.63 miles of distribution as part of a transmission line rebuild	$139,000
7	Muessel Station	Rebuild and convert station from 34.5kV to 69kV	$347,000

Major Projects 2020			
Map Reference Number	Station	Description	Estimated Capital Cost
1	Fuson Station	Construct a new station with six feeders	$5,940,000
2	Rose Hill Station	Install a second feeder	$2,590,000
3	Royerton Station	Install a Distribution Remote Terminal Unit (DRTU)	$44,000
4	SDI Improvements	Rebuild 1.5 miles of distribution line as part of a transmission line build.	$459,000
5	Strawboard Station	Install a distribution bus and three feeders	$3,514,000

Risk Mitigation 2019			
Station	Units	Description	Est O&M Cost
Wood Pole Inspection	15,291 Units	Comprehensive pole inspection and treatment	$250,000
URD Equipment Inspection	5,855 Units	Inspect above ground structures (padmounts, enclosures, pedestals, etc.)	$60,550
Overhead Line Inspection	1,224 Miles	Inspect overhead distribution lines	$110,000
Contact Voltage Inspection	4 Cities	Inspect downtown business district network areas	$77,313
		Total	$497,863

Risk Mitigation 2020			
Station	Units	Description	Est O&M Cost
Wood Pole Inspection	30,582 Units	Comprehensive pole inspection and treatment	$515,000
URD Equipment Inspection	11,710 Units	Inspect above ground structures (padmounts, enclosures, pedestals, etc.)	$124,733
Overhead Line Inspection	2,448 Miles	Inspect overhead distribution lines	$226,600
Contact Voltage Inspection	4 Cities	Inspect downtown business district network areas	$79,632
		Total	$945,965

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AMI 2019			
Station	Circuit	Description	Units
	Various	Replace existing meters with AMI meters	
		Total	0
	Estimated O&M	$0	
	Estimated Capital	$0	

AMI 2020			
Station	Circuit	Description	Units
	Various	Replace existing meters with AMI meters	60,038
		Total	60,038
	Estimated O&M	$308,927	
	Estimated Capital	$10,777,000	

Distribution Line Sensors 2019			
Station	Circuit	Description	Units
Whitaker		Install Distribution Line Sensors	45
Jackson Road		Install Distribution Line Sensors	75
		Total	120
	Estimated O&M	$0	
	Estimated Capital	$189,199	

Distribution Line Sensors 2020		
	Total	**0**
Estimated O&M	$0	
Estimated Capital	$0	

Smart Recloser Replacement 2019			
Station	Circuit	Description	Units
Pine	Blackthorn	JO0159000164 Install NOVA STS	3
Quinn	Lakeville	JO0461000055 Install NOVA STS	3
Pine	Blackthorn	JO0159000193 Install NOVA STS	3
Dunlap	#2	EL0275000356 Install NOVA STS	3
Dunlap	River Manor	EL0255000019 Install NOVA STS	3
East Side	Adams	JO0260000492 Install NOVA STS	3
Granger	#5	JO0167000009 Install NOVA STS	3
Ireland Road	#3	JO0417000025 Install NOVA STS	3
Ireland Road	#3	JO0417000097 Install NOVA STS	3
Ireland Road	South Main	JO0350000750 Install NOVA STS	3
Lydick	Ardmore	JO0231000080 Install NOVA STS	3
Pine	Landmark	JO0158000272 Install NOVA STS	3
Pine	South	JO0207000723 Install NOVA STS	3
Silver Lake	Rolling Prairie	LP0194000097 Install NOVA STS	3
Silver Lake	Rolling Prairie	LP0236000083 Install NOVA STS	3
Granger	#2	JO0169000032 Install NOVA STS	3
New Carlisle	#1	JO0198000065 Install NOVA STS	3
Olive	East	JO0201000188 Install NOVA STS	3
South Elwood	Country Club	MA0025B40001 Install NOVE STS	3
Madison	Madison	MA0080A40126 Install NOVA STS	3
Gaston	Wheeling Pike	DE0014000026 Install NOVA STS	3
Hartford City	South	BL0030C40002 Install NOVA STS	3
Bluff Point	Ridgeville	JA0097000145 Install NOVA STS	3
Hogan	River Road	DE0064B00029 Install NOVA STS	3
Hummel Creek	West	GR0016D20640 Install NOVA STS	3
Farmland	Bears	RA0057000173 Install NOVA STS	3
Hummel Creek	South	GR0028A40101 Install NOVA STS	3
Mier	Sweetser	GR0025D20029 Install NOVA STS	3
Mier	Sweetser	GR0014000107 Install NOVA STS	3
Mier	Sweetser	GR0025D40076 Install NOVA STS	3
Fairmount	West Eighth	GR0081000181 Install NOVA STS	3
Albany	Albany	DE0030D20006 Install NOVA STS	3
Albany	Albany	RA0001A10002 Install NOVA STS	3
Albany	Albany	RA0001000367 Install NOVA STS	3
Albany	Albany	RA0030B30005 Install NOVA STS	3
		Total	105
	Estimated O&M	$2,363	
	Estimated Capital	$1,476,827	

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Smart Recloser Replacement 2020			
Station	Circuit	Description	Units
Countryside	Bent Oak	EL0293000050 Install NOVA STS	3
Countryside	Homestead	EL0296000037 Install NOVA STS	3
Lusher	Wolf	EL0231000452 Install NOVA STS	3
Lusher	Wolf	EL0231000477 Install NOVA STS	3
Whitaker	#2	EL0208000063 Install NOVA STS	3
Jackson Road	Roosevelt Road	JO0370000081 Install NOVA STS	3
South Bend	#1	JO0213000092 Install NOVA STS	3
Hummel Creek	South	GR0028A20037 Install NOVA STS	3
Linwood	Linwood	MA0054000229 Install NOVA STS	3
Hummel Creek	West	GR0016D20015 Install NOVA STS	3
Linwood	Linwood	MA0054B10014 Install NOVA STS	3
Rose Hill	Rose Hill	MA0061000024 Install NOVA STS	3
Daleville	East	DE0084C40159 Install NOVA STS	3
Twenty First St	Cowan	DE0096B30058 Install NOVA STS	3
Mier	Sweetser	GR0025B40088 Install NOVA STS	3
Linwood	Linwood	MA0054D10094 Install NOVA STS	3
Hummel Creek	South	GR0007000229 Install NOVA STS	3
Hartford City	North	BL0024000246 Install NOVA STS	3
Hummel Creek	South	GR0017C00599 Install NOVA STS	3
Linwood	Linwood	MA0054D10018 Install NOVA STS	3
Rose Hill	Rose Hill	MA0060000105 Install NOVA STS	3
Daleville	East	DE0085000114 Install NOVA STS	3
Rose Hill	Rose Hill	MA0067000212 Install NOVA STS	3
Blaine	Luick	DE0077B30062 Install NOVA STS	3
Royerton	Riggin Road	DE0047B20212 Install NOVA STS	3
Gaston	Gaston	DE0023A40073 Install NOVA STS	3
Hummel Creek	South	GR0028A40021 Install NOVA STS	3
Jay	Redkey	JA0081D10007 Install NOVA STS	3
Farmland	Bears	RA0046000202 Install NOVA STS	3
Wesdel	Harrison	DE0043000048 Install NOVA STS	3
Aladdin	Yule	MA0038B30048 Install NOVA STS	3
		Total	93
	Estimated O&M	$2,139	
	Estimated Capital	$1,325,700	

Smart Circuit Ties 2019				
Map Reference Number	Station	Circuit	Description	Miles
1	Utica	Memorial	DE75C1-63 to DE75A4-135 Build new 556AL tie line	1.00
2	Gaston	Matthews	GR109C2-17 to GR98-85 Repl. 1 Ph & 3 Ph with 556AL	0.75
3	Wesdel	Farmington	DE45D4-63 to DE45B4-67 Rebuild 1 Ph to 3 Ph	0.63
4	Sorenson	Redding Rd	Reconductor with 556 AL from HU131-41 to HU116-26	0.97
5	Sorenson	Redding Road	Reconductor with 556 AL from HU0116000026 to AL0582000052	1.11
6	Sorenson	Redding Road	Reconductor with 556 AL from AL0582000052 to AL0583000065	0.81
7	Sorenson	Redding Road	Reconductor with 556 AL from AL0583000065 to AL0584000043	1.21
8	Sorenson	Redding Road	Reconductor with 556 AL from AL0584000043 to AL0584000018	0.63
9	County Line	Tonkel	Reconductor 2/0 Cu to 556 AL from AL0112000024 to AL0139000041	1.17
10	County Line	Tonkel	Reconductor 2/0 Cu to 556 AL from AL0139000041 to AL0193000038	1.50
11	County Line	Tonkel	Reconductor 2/0 Cu to 556 AL from AL0193000038 to AL0220000058	1.00
12	County Line	Tonkel	Reconductor 2/0 Cu to 556 AL from AL0112000056 to AL0112000024	0.83
13	Jackson	Lafayette	Reconductor / multi-phase from JO325-104 to JO324-98	1.20
14	Jackson	Lafayette	Reconductor / multi-phase from JO326-298 to JO325-101	1.12
15	Jackson	Lafayette	Reconductor / multi-phase from JO326-298 to JO325-101 UG Portion	0.01
16	Gravel Pit	#1	Reconductor / multi-phase from JO323-44 to JO324-98	0.66
17	Northwest	#2	EL0189000047	1.14
18	Olive	East	Reconductor 4 - 2 AA from JO0200000051 to JO0201000151,	1.04
19	Hogan	River Road	DE61-41 to MA56-18	1.32
20	Gaston	Matthews	GR109C2-17 to GR98-85	1.09
			Total	19.2
		Estimated O&M	$125,656	
		Estimated Capital	$6,294,148	

Indiana Michigan Power - Indiana Distribution Management Plan

Smart Circuit Ties 2020				
Map Reference Number	Station	Circuit	Description	Miles
1	East Side/ South Bend	Wilson/ No 3	Reconductor 4/0 CU with 556 AL from JO0261000083 to JO0261000089	0.19
2	Northwest/ Northwest	No 3/ No 4	Reconductor 4/0 CU with 556 AL from EL0209001072 to EL0209000437	0.61
3	Kankakee/ West Side	Sample/ No 2	Reconductor 2 Cu & 2 AS to 556 AL from JO0255000416 to JO0256000347	0.93
4	South Side/ Studebaker/ F	South Main/ Roadster	Reconductor 4/0 CU to 556 AL from JO0282000584 to JO0304000096	0.57
5	East Side/ East Side	IUSB/ Ironwood	Reconductor 4/0 CU with 556 AL from JO0261001571 to JO0285000039	0.42
6	Springville/ Silver Lake	Toll Rd/ Rolling Prairie	Reconductor 3/0 AS to 556 AL from LP0232000053 to LP0235000103	3.79
7	County Line	Tonkel	Reconductor 4 AS to 556 AL & 4/0 AAAC. From DK0423000011 to DK0381000020	1.01
8	St. Joe	West	Reconductor 4 CU to 556 AL from DK0389000003 to DK0387000055	2.00
9	County Line	Tonkel	Reconductor 4 AS to #2 AAAC from DK0400000010 to DK0423000011	1.46
10	County Line	Tonkel	Reconductor 4 CU, 4 AS, & 6 ACC (Mix) to #2 AAAC from DK0402000109 to DK0406000024	4.48
11	Cross Street	Moonville	Replace 2AS & 2CU with 556AL From MA56-57 to MA56A4-4	0.86
12	Montpelier	Roll	Replace 4AS, 4CU, 6A CC, 2AA with 556AL From BL2-77 to BL2-1	2.00
13	Gaston	Wheeling	Rebuild 1 PH to 3 Ph 556AL From DE15-220 to DE16-181	2.00
14	Grant	South	Replace 2 CU with 556AL From GR48-188 to GR48-218	1.60
15	Gaston / Upland	Matthews / South	Rebuild 1Ph to 3PH 556AL From GR98-85 to GR87-20	1.73
16	Hogan	River Road	Replace 2 CU with 556 AL from DE61-41 to MA56-18	0.36
17	Woodburn	Woodburn	Reconductor 4 CU to 556 AL from AL345-14 to AL346-19	0.31
			Total	24.3
		Estimated O&M	$164,026	
		Estimated Capital	$13,237,969	

Distribution Automation 2019			
Station	Circuit	Description	Units
Decatur	Magley	Install new automatic transfer scheme	1
Wallen	Summit	Install new automatic transfer scheme	1
Trier	Hacienda	Install new automatic transfer scheme	1
Grabill	County Line	Install new automatic transfer scheme	1
South Side	Studebaker	Install new automatic transfer scheme	1
Mayfield	Selma Parker	Install new automatic transfer scheme	1
		Total	6
	Estimated Capital	$6,770,850	

Distribution Automation 2020			
Station	Circuit	Description	Units
Deer Creek	Dooville	Install new automatic transfer scheme	1
East Side	South Bend	Install new automatic transfer scheme	1
County Line	Diebold	Install new automatic transfer scheme	1
Daleville	Cross Street	Install new automatic transfer scheme	1
Illinois Road	Colony Bay	Install new automatic transfer scheme	1
		Total	5
	Estimated Capital	$4,878,066	

Station SCADA 2019			
Station	Circuit	Description	Units
Twenty First Street	Part 1 of 2	Install station SCADA	0.75
Murray		Install station SCADA	1
		Total	1.75
	Estimated Capital	$2,432,935	

Station SCADA 2020			
Station	Circuit	Description	Units
Twenty First Street	Part 2 of 2	Install station SCADA	0.25
Portland		Install station SCADA	1
McGalliard Road		Install station SCADA	1
		Total	2.25
	Estimated Capital	$3,349,687	

2019 & 2020 Indiana Vegetation Management Work Plan

Vegetation Management - 2019						
Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
1	2019	Adams	Linn Grove		63.9	63.9
2	2019	Anthony	Bowser		12.1	12.1
3	2019	Arnold Hogan	Cammack	12.3	10.6	22.9
4	2019	Arnold Hogan	River Road		36.1	36.1
5	2019	Beech Road	Bittersweet	7.6	7.7	15.3
6	2019	Beech Road	Dunn	15.7	11.2	26.9
7	2019	Bethel	Village		8.6	8.6
8	2019	Bixler	Allen Chapel		3.5	3.5
9	2019	Blaine Street	Luick		38.3	38.3
10	2019	Butler	West	51.3	2.9	54.1
11	2019	Churubusco	Blue Lake		29.4	29.4
12	2019	Colfax	No 1		12.0	12.0
13	2019	Colony Bay	Colony		5.8	5.8
14	2019	Colony Bay	Inverness		8.1	8.1
15	2019	County Line	Leo		33.2	33.2
16	2019	Countyroad 4	Simonton Lake	18.2	10.8	28.9
17	2019	Cross Street	Moonville	48.8	17.0	65.8
18	2019	Daleville	East		74.2	74.2
19	2019	Darden Road	Auten Road		25.5	25.5
20	2019	Darden Road	East		15.1	15.1
21	2019	Darden Road	Lilac		12.0	12.0
22	2019	Decatur	Root	11.0	9.2	20.3
23	2019	Deer Creek	East		18.2	18.2
24	2019	Deer Creek	North	5.4	4.0	9.4
25	2019	Drewrys	Wilber		7.3	7.3
26	2019	East Side	Ironwood		15.8	15.8
27	2019	East Side	Iusb		2.0	2.0

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
28	2019	Ellison Road	Eagle Marsh		4.0	4.0
29	2019	Elmridge	Brindle Rd		2.6	2.6
30	2019	Elmridge	Sewage Plant		0.8	0.8
31	2019	Ferguson	Baerfield		3.2	3.2
32	2019	Gaston	Matthews		66.5	66.5
33	2019	Glenbrook	Northrop		6.9	6.9
34	2019	Granger	No 5	9.4	7.9	17.4
35	2019	Gravel Pit	No 2		45.3	45.3
36	2019	Hacienda	Arlington		4.8	4.8
37	2019	Hacienda	Hartford		13.8	13.8
38	2019	Hacienda	Wheelock		10.4	10.4
39	2019	Hadley	Blake		5.6	5.6
40	2019	Hadley	Sutton		6.2	6.2
41	2019	Hamilton	Factory		38.2	38.2
42	2019	Harlan	Springfield		9.8	9.8
43	2019	Harvest Park	Main Street		3.7	3.7
44	2019	Hillcrest	Ventura		17.2	17.2
45	2019	Hillcrest	Warfield		7.9	7.9
46	2019	Hummel Creek	West		57.2	57.2
47	2019	Indiana Purdue Univ	College Park		10.5	10.5
48	2019	Indiana Purdue Univ	Marketplace		8.5	8.5
49	2019	Industrial Park	Harris		6.6	6.6
50	2019	Ireland Road	No 4		14.3	14.3
51	2019	Jackson Road	Lafayette	13.8	1.8	15.6
52	2019	Jackson Road	Michigan Street		12.1	12.1
53	2019	Jackson Road	Roosevelt Road		28.6	28.6
54	2019	Jackson Road	Scottsdale		6.7	6.7
55	2019	Jobes	West Commercial	0.1		0.1
56	2019	Kankakee	Sample		11.2	11.2
57	2019	Kendallville	Central		6.5	6.5
58	2019	Kendallville	Kraft Food	0.3	1.1	1.4
59	2019	Lantern Park	East		2.9	2.9
60	2019	Lantern Park	Nebo	3.5	3.6	7.1
61	2019	Lantern Park	Petty Rd		6.0	6.0

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
62	2019	Liberty Center	Poneto	48.2	21.4	69.6
63	2019	Ligonier	Kimmell		32.4	32.4
64	2019	Lincoln	Hartzell		20.4	20.4
65	2019	Lincoln	Maysville		22.3	22.3
66	2019	Lincoln	Parrott		8.0	8.0
67	2019	Lusher Avenue	No 2	17.2	1.8	19.0
68	2019	Lydick	Ardmore		12.0	12.0
69	2019	Lydick	Country Club	28.3	1.8	30.1
70	2019	Lydick	Town		65.3	65.3
71	2019	Madison	Madison	17.0		17.0
72	2019	Marion Plant	East		8.9	8.9
73	2019	Mayfield	Springwater		18.3	18.3
74	2019	Mcclure	Industrial		7.8	7.8
75	2019	Mcgalliard	Chateau		5.0	5.0
76	2019	Mcgalliard	Wheeling Pike		6.6	6.6
77	2019	Mckinley	Ardmore		8.2	8.2
78	2019	Mckinley	Engle		12.0	12.0
79	2019	Mckinley	Hale		12.0	12.0
80	2019	Mckinley	Phenie		8.8	8.8
81	2019	Mckinley	Taylor		10.6	10.6
82	2019	Melita	Fairfield		6.5	6.5
83	2019	Melita	Harmar		2.2	2.2
84	2019	Melita	Oxford		9.0	9.0
85	2019	Melita	Wayne		0.5	0.5
86	2019	Mier	Sweetser	61.3	3.3	64.6
87	2019	Mississinewa	River		1.3	1.3
88	2019	Noble	Avilla		13.9	13.9
89	2019	North Kendallville	Hospital		5.3	5.3
90	2019	North Kendallville	Publix		12.9	12.9
91	2019	North Kendallville	Village		21.7	21.7
92	2019	Northland	No 5	16.7	14.6	31.3
93	2019	Northland	No 6		9.6	9.6
94	2019	Parnell	Vance		17.5	17.5
95	2019	Pennville	Pennville	57.9	20.0	77.9

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
96	2019	Pettit Avenue	Belmont		14.0	14.0
97	2019	Pine Road	Blackthorn		6.4	6.4
98	2019	Pipe Creek	Cole	63.6	5.8	69.4
99	2019	Portland	Commercial		20.0	20.0
100	2019	Randolph	Commercial		37.7	37.7
101	2019	Randolph	Jackson Pike	45.8	4.3	50.1
102	2019	Reed	Bohde		15.8	15.8
103	2019	Robison Park	Auburn Road		9.2	9.2
104	2019	Robison Park	Dupont		29.8	29.8
105	2019	Royerton	Riggin		29.2	29.2
106	2019	South Bend	No 2		15.1	15.1
107	2019	South Berne	Forest Park		11.1	11.1
108	2019	South Elwood	Dundee	53.6	2.3	55.9
109	2019	Spy Run	Lakeside		3.3	3.3
110	2019	State Street	Trier		9.0	9.0
111	2019	Swanson	No 2		16.2	16.2
112	2019	Thomas Road	Beineke		7.7	7.7
113	2019	Tillotson Avenue	Westwood		11.3	11.3
114	2019	Twenty First Street	Walnut		3.1	3.1
115	2019	Upland	South		38.9	38.9
116	2019	Upland	West	7.0		7.0
117	2019	Utica	Industrial		15.1	15.1
118	2019	Utica	Meadows		10.6	10.6
119	2019	Utica	Memorial	2.4	1.1	3.5
120	2019	Utica	Ross	7.6	2.2	9.8
121	2019	Wabash Ave.	Gilkey	8.0	8.3	16.3
122	2019	Wallen	Cook		6.8	6.8
123	2019	Wallen	Honeywell		8.4	8.4
124	2019	Wallen	Pine Valley		9.9	9.9
125	2019	Wayne Trace	Meyer		19.7	19.7
126	2019	Wayne Trace	Paulding		22.7	22.7
127	2019	Wayne Trace	Stinson		20.8	20.8
128	2019	Waynedale	Covington		9.2	9.2

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
129	2019	Waynedale	Lakewood		19.7	19.7
130	2019	Wes Del	Dice Acres		15.2	15.2
131	2019	Wes Del	Harrison		46.9	46.9
132	2019	West End	North		9.4	9.4
133	2019	Whitaker	No 3		13.8	13.8
134	2019	Winchester	Fountain Park	26.7	14.5	41.2
135	2019	Wolf Lake	Market		10.4	10.4
				659	**1,904**	**2,562**

Vegetation Management - 2020						
Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
1	2020	Aviation	Apache		3.2	3.2
2	2020	Aviation	Raptor		0.5	0.5
3	2020	Aviation	Warthog		16.0	16.0
4	2020	Beech Road	Mckinley		18.6	18.6
5	2020	Bixler	Grand Army		3.9	3.9
6	2020	Bixler	Industrial		0.7	0.7
7	2020	Bixler	Marion		1.4	1.4
8	2020	Capital Ave	Penn		18.6	18.6
9	2020	Cleveland	Discovery		11.7	11.7
10	2020	Colfax	No 3	3.0	1.7	4.7
11	2020	Colony Bay	Copper Hill		4.1	4.1
12	2020	Colony Bay	Medical Park		2.6	2.6
13	2020	Conant	No 1		7.8	7.8
14	2020	Concord	No 6		12.4	12.4
15	2020	Countryside	Bent Oak	7.0	1.0	8.1
16	2020	Countryside	Homestead		31.7	31.7
17	2020	Countryside	Jimtown	2.5	11.6	14.1
18	2020	County Line	Dekalb		44.9	44.9
19	2020	County Line	Tonkel		25.5	25.5
20	2020	Countyroad 4	Airport	8.7	2.5	11.2
21	2020	Countyroad 4	Garver Lake	11.3		11.3
22	2020	Decatur	Krick		12.2	12.2
23	2020	Decatur	Union	72.0	35.2	107.2
24	2020	Diebold Road	Martin	6.4		6.4

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
25	2020	Diebold Road	Medical Campus			0.0
26	2020	Diebold Road	Pleasant Valley	3.3		3.3
27	2020	Drewrys	Brookfield		11.4	11.4
28	2020	Dunlap	River Manor		21.1	21.1
29	2020	East Side	Hastings		12.3	12.3
30	2020	East Side	Wilson		16.4	16.4
31	2020	Ege	#1 Remc	0.1		0.1
32	2020	Garrett	Weller	9.4		9.4
33	2020	German	No 5		8.9	8.9
34	2020	Glenbrook	Ley Road		4.3	4.3
35	2020	Glenbrook	Speedway		2.9	2.9
36	2020	Grabill	Antwerp		22.4	22.4
37	2020	Grabill	Page		44.4	44.4
38	2020	Granger	No 1		9.8	9.8
39	2020	Gravel Pit	No 1	13.1	2.8	15.9
40	2020	Hacienda	Maplewood		10.3	10.3
41	2020	Hacienda	Schwartz		15.3	15.3
42	2020	Hadley	Flaugh		32.2	32.2
43	2020	Hadley	Hickory Pointe	5.3	0.4	5.7
44	2020	Harlan	Thimler		82.3	82.3
45	2020	Harper	Minich		36.1	36.1
46	2020	Harvest Park	Rail		0.9	0.9
47	2020	Illinois Road	Chestnut	18.1		18.1
48	2020	Illinois Road	Covington		7.2	7.2
49	2020	Industrial Park	Progress		2.9	2.9
50	2020	Industrial Park	Summit		8.1	8.1
51	2020	Industrial Park	Wells		8.8	8.8
52	2020	Jackson Road	South Main		12.0	12.0
53	2020	Kankakee	Olive	14.3	4.7	19.0
54	2020	Kendallville	Krueger	4.7	3.3	8.0
55	2020	Lapaz	No 1		30.5	30.5
56	2020	Magley	Preble	75.6	18.0	93.6
57	2020	Monroeville	Hoffman		55.6	55.6
58	2020	Murray	Murray		16.1	16.1
59	2020	Northland	No 1		5.9	5.9
60	2020	Northland	No 4		8.5	8.5
61	2020	Northwest	No 1	10.1	1.1	11.2

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
62	2020	Olive	East	20.7	10.0	30.7
63	2020	Olive	West		28.2	28.2
64	2020	Osolo	No 5		9.0	9.0
65	2020	Osolo	No 6		13.4	13.4
66	2020	Pettit Avenue	Sears		14.2	14.2
67	2020	Pine Road	Landmark	10.4	2.2	12.5
68	2020	Pine Road	South	10.4	4.4	14.8
69	2020	Robison Park	Plaza		1.0	1.0
70	2020	Silver Lake	Rolling Prarie		49.9	49.9
71	2020	South Bend	No 3		12.0	12.0
72	2020	South Decatur	Gage		40.6	40.6
73	2020	South Side	No 3	3.5	2.8	6.3
74	2020	Soya	Number 1			0.0
75	2020	Soya	Number 2			0.0
76	2020	Spring Street	Leesburg		5.1	5.1
77	2020	Spring Street	Tower		9.5	9.5
78	2020	Spring Street	Tyler		4.9	4.9
79	2020	Spring Street	Viola		0.7	0.7
80	2020	Spy Run	Lawton		3.6	3.6
81	2020	Spy Run	Three Rivers	5.9	4.6	10.5
82	2020	St Joe	Newville		24.8	24.8
83	2020	St Joe	West		98.3	98.3
84	2020	State Street	Brentwood		13.8	13.8
85	2020	Studebaker	Roadster	2.0	2.7	4.7
86	2020	Summit	Innovation		1.0	1.0
87	2020	Summit	Ludwig		4.6	4.6
88	2020	Summit	Salomon		5.5	5.5
89	2020	Swanson	No 1		24.5	24.5
90	2020	Twin Branch	No 1		52.9	52.9
91	2020	Wallen	Fritz	9.1		9.1
92	2020	Waynedale	Smith	2.4		2.4
93	2020	West Side	No 5	9.6	4.0	13.6
94	2020	West Side	No 6	11.4		11.4
95	2020	Randolph	Sawmill	0.3		0.3
96	2020	Utica	Nichols	0.8	1.7	2.5
97	2020	Winchester	Overmyer	0.8		0.8

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
98	2020	Jones Creek	Green	1.4		1.4
99	2020	Pipe Creek	Crusher	1.6		1.6
100	2020	North Portland	West	1.8	3.8	5.6
101	2020	West End	East	3.2	0.8	4.0
102	2020	Miller Avenue	South	5.6		5.6
103	2020	Bosman	Shideler	7.2	5.0	12.2
104	2020	Blaine Street	Grant Street	7.6	1.2	8.8
105	2020	Gas City	East	8.2	4.8	13.0
106	2020	Linwood	Frankton	13.6	9.5	23.1
107	2020	Portland	Sheller	15.6	2.3	17.9
108	2020	Van Buren	Landess	16.3	9.8	26.1
109	2020	North Portland	North	18.1	11.5	29.6
110	2020	Haymond	Jefferson	18.8		18.8
111	2020	Hartford City	South	21.3	6.7	28.0
112	2020	Hartford City	Central	21.9	1.7	23.6
113	2020	Bluff Point	Ridgeville	22.5	6.0	28.5
114	2020	Modoc	Modoc	28.8	29.6	58.4
115	2020	Van Buren	Van Buren	29.6	16.5	46.1
116	2020	Mayfield	Selma	34.1		34.1
117	2020	Gaston	Wheeling Pike	37.9		37.9
118	2020	Mier	Swayzee	48.3	16.3	64.6
119	2020	Montpelier	East	70.1	14.9	85.0
120	2020	Montpelier	Roll	91.7	13.7	105.4
121	2020	West End	Gencorp Automotive		0.3	0.3
122	2020	Mcclure	West Commercial		1.0	1.0
123	2020	Randolph	Industrial		1.1	1.1
124	2020	North Portland	Forge		1.1	1.1
125	2020	Marion Plant	Commercial		1.2	1.2
126	2020	Mcclure	East Commercial		2.5	2.5
127	2020	Alexandria	Commercial		4.1	4.1
128	2020	Marion Plant	South		4.4	4.4
129	2020	Alexandria	Johns Manville		4.5	4.5
130	2020	Miller Avenue	North		4.5	4.5
131	2020	Marion Plant	Hospital		7.6	7.6
132	2020	Grant	South		9.0	9.0
133	2020	Montpelier	Montpelier		9.7	9.7
134	2020	Wes Del	Farmington		11.5	11.5

Map Reference Number	Year	Station	Circuit	Initial Clear Miles	Remedial Clear Miles	Total Miles
135	2020	Haymond	Riverside		11.6	11.6
136	2020	West End	South		13.4	13.4
137	2020	Mcgalliard	Morningside		14.5	14.5
138	2020	Mayfield	Waterworks		30.1	30.1
139	2020	Portland	East		31.2	31.2
140	2020	Linwood	Linwood		41.3	41.3
141	2020	Lynn	Lynn		42.7	42.7
142	2020	Royerton	Eden Church		46.5	46.5
143	2020	Alexandria	North		69.2	69.2
144	2020	Selma Parker	Wapahani		72.1	72.1
145	2020	Farmland	Bears		75.4	75.4
				877	**1,899**	**2,776**

South Bend/Elkhart Area – Bosserman – New Carlisle Area Improvements

Project Description:

This project is a jointly developed I&M transmission and distribution reliability enhancement project to rebuild and convert the 34.5 kV line and create a looped 138 kV line to New Carlisle, Silver Lake, Springville, and Bosserman stations.
Convert the New Carlisle station to 138kV operation and relocate 1-12kV feeder and install 2 new 12kV feeders.
Convert the Silver Lake station to 138kV operation and add 2-138/12kV, 10 MVA non-LTC transformer with 12kV bus regulation and 4-12kV feeders
Convert and relocate the Springville station into a new modern 138kV station to be called Marquette. Install 2-138/12kV, 10 MVA non-LTC transformer with 12kV bus regulation and 4-12kV feeders. Extend and reconductor the feeders to reconfigure the distribution from two to four feeders.
Install station Supervisory Control and Data Acquisition (SCADA) at New Carlisle, Silver Lake and Marquette stations.
ISD = 2020; 3 year project timeline

Justification / Need for the Project:

The Bosserman-New Carlisle project is due to concerns of reliability. The following are the drivers for this project:

The New Carlisle-Laporte Junction (Bosserman) line is a 1930-1940 vintage wood pole construction and is in need of a full rebuild. The 34.5kV line MOAB's at Silver Lake station have mis-operated multiple times.
The aged transmission system has accounted for about 2 million customer minutes of interruption in two years.
The distribution underbuild can't be reconductored due to sub-transmission pole limitations.
The Silver Lake and Springville stations are 1940's vintage with equipment beyond its life expectancy. Both sites are space constrained and will need to be expanded to accommodate the 138 kV conversion.
These stations have very limited circuit ties that limit the amount of load that can be transferred for contingency needs leaving over 26 MVA of load at risk of extended outages.
The construction of 4 new 12 kV circuits is to increase reliability by reducing circuit exposure and improve circuit transfer capabilities.
Increase reliability with remote supervisory control and load monitioring.

Distribution Line Component:

- New Carlisle station: Reconductor the one existing station exit and install two new feeders and reconfigure existing circuit, with approximately 3 miles overhead 3-556AL + 1-4/0AA conductor.
- Silver Lake station: Construct 2 new 12kV feeders and reconfigure the feeders, with approximately 4.8 miles overhead 3-556AL + 1-4/0AA conductor.
- Marquette (Springville) station: Construct 2 new 12kV feeders and reconfigure the feeders, with approximately 6.1 miles overhead 3-556AL + 1-4/0AA conductor.

Benefits of the Project:

The New Carlisle – Bosserman line rebuild and voltage conversion project relieves reliability concerns with the aged 34.5kV wood pole line and its 12kV underbuild distribution line.
The project also provides capacity to recover loads at New Carlisle, Silver Lake, and Marquette stations relieving concerns of 26 MVA of load at risk.
The conversion to 138kV modernizes the area to be in phase with the surrounding Olive Station.
New Carlisle station upgrades includes the high side ground switch replacement with a circuit switcher.
Silver Lake and Marquette stations will both be new modern 138/12kV stations reducing outage concerns with the 1940's vintage station equipment.
The feeder additions at all three stations will improve reliability by reducing customer exposure and increased transfer options by providing another field tie.
SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.
New equipment is more reliable for customers and safer for employees.

South Bend/Elkhart Area – Colfax Station

Project Description:

This project is a jointly developed I&M transmission and distribution reliability enhancement project to rebuild and convert the Colfax station from 34.5kV to 69kV. The project will rebuild the station with a new layout due to space constraints. Relocate 3-12kV feeder exits to the Cofax station, extend to contect to existing circuits. ISD = 2019; 1 year project timeline

Justification / Need for the Project:

The voltage conversion is to address single contingency overload on the South Bend-Saint Mary's 34.5 kV line for the outage of West Side – Drewry's 34.5 kV line under 2019 summer simulated conditions.

- This voltage conversion will require a station layout revision and relocation of existing 12 kV exits.

Distribution Line Component:

- The new station layout will require all three 12kV feeder exits to be relocated and extended to existing circuit configuration utilizing 3-1000MCMAL + 1 – 4/0Cu EPR cable.

Benefits of the Project:

- The project relieves reliability concerns of aged equipment and improves the ability for contingency transfers by having in-phase circuit ties.
- Integrating circuit breaker controls into SCADA will contribute to the strategic goal of modernizing the distribution grid.

South Bend/Elkhart Area – Elkhart Area Network Project

Project Description:

Rebuild the existing Elkhart area network from 2-34.5 kV and 2-4 kV feeders from Elkhart Hydro Station into a new network only station at Harrison Street with 4-13.8 kV feeders.
Convert Harrison Street Station from 34.5 to 69 kV operation and transfer existing distribuition to Lusher Ave to create a new modern 69/13.8 kV four feeder underground network station.
Convert Lusher Ave Station from 34.5 to 69 kV operation and double its capacity by installing 2-20 MVA transformers and 6-12 kV feeders.
Rebuild Elkhart Hydro Station from 34.5/12/4 kV into a modern 69/34.5/12 kV station with a new 20 MVA non-LTC transformer and 3-12 kV feeders, one of which is new.
Install station Supervisory Control and Data Acquistion (SCADA) at Harrison Street, Elkhart Hydro, and Lusher Ave Stations.
ISD 2019; 4 year project timeline.

Justification / Need for the Project:

Construction of Elkhart area network is due to concerns of reliability. The following are the drivers for this project:

The entire 34.5 kV subtransimission system in central Elkhart is comprised of equipment that is 40-70 years old and requires costly maintenance or replacements facilities.
Harrison Street Station is located much closer to the Elkhart underground distribution network service area, but is not currently an acceptable network source because it is the last 34.5/4 kV station supplying a single 4 kV overhead distribution circuit with no backup in South Bend and Elkhart area. In addition, Harrison Street Station is radially supplied by a single 1.5 mile long 34.5 kV line via 2-way without automatic sectionalizing capability.
The Elkhart Hydro Station is comprised of 4 kV equipment that was installed in the 1920's and is obsolete and has clearance issues that require complete outages for station personnel to access.
The four existing network feeders share nearly a mile of common manhole/duct line that includes a single bridge crossing that can create outages to the entire system for a single contingency issue.
Lusher Ave Station 34.5/69 kV conversion is necessary for Harrison Street Station and will address significant issues; including unsafe 34.5 kV bus clearances inside the station, aging 34.5/12 kV LTC transformer, deteriorated wood pole structures within the station, two aging 1950's vintange 34.5 kV CB's, and underground exit cables at the end of life.
Increased reliability with remote supervisory control and load monitioring.

Distribution Line Component:

- Elkhart Hydro will relocate the existing distribution exits and add one new 12 kV feeder exit. All three feeders will be overhead with 3-556 AL & 1-4/0 AA conductor. This is estimated to be a total of 0.7 miles.

- The Lusher Ave component will relocate the existing three 12 kV feeders and add three new feeders. These will have 4 underground 3-1000 MCM AL & 1-4/0 CU EPR and 2 overhead with 3-556 AL & 1-4/0 AA conductors. The distance is estimated to be 0.25 miles of underground and 1 mile of overhead.

- Install 4-12 kV primary exits from Harrison Street Station consisting of 3-1000 MCM AL EPR &1-4/0 CU to supply the underground network.

Benefits of the Project:

- The relocation of Elkhart area network to Harrison Street Station and conversion to 69kV supply relieves reliability concerns of aged 34.5 kV equipment that has parts unavailable until custom units can be made and reduces the length of the network feeders.
- Modernizing into a 69 kV system eliminates ongoing equipment outages and brings the area in phase with the adjacent 138 kV stations.
- The added capacity at Lusher Ave Station relieves loading on adjacent stations and improves the ability to serve an increasing load.
- The load served by Lusher Ave becomes fully recoverable.
- The added capacity and feeder at Elkhart Hydro replaces an aged station transformer that has scored high on the asset renewal metric and improves reliability.
- SCADA capabilities allow enchanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.

Decatur Area – Liberty Center Station

Project Description:

- Rebuild the existing Liberty Center Station.
- Install new 69/12 kV, 6.25 MVA transformer.
- Install a new distribution bay.
- Install two 12 kV distribution circuit breakers and exits
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2019; 2 year project timeline.

Justification / Need for the Project:

Reconstruction of the Liberty Center distribution station is due to concerns of reliability. The following are drivers for this project:

- The existing distribution facilities at Liberty Center Station at the end of their expected life.
- Load transfers between the Liberty Center circuits require all switching to be done outside of the station.
- Existing distribution facilities are not compatible with the SCADA system.

Distribution Line Component:

Install two new overhead distribution exits from Liberty Center station totaling 200 feet in length using 3-556 AL & 1-4/0 AA conductor.

Benefits of the Project:

- Relieves reliability concerns of aged equipment and improves the ability for contingency transfers.
- SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.
- New equipment is more reliable for customers and more easily maintained.

Decatur Area – Limberlost Station

Project Description:

- Build a new 69/12 kV station, called Limberlost.
- Install a new 69/12 kV, 12.5 MVA transformer.
- Install a new distribution bay.
- Install two 12 kV distribution circuit breakers and exits
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2019; 2 year project timeline.

Justification / Need for the Project:

Construction of the Limberlost distribution station is due to concerns of reliability. The following are drivers for this project:

- A station outage to the adjacent South Berne Station results in 7 MVA of unrecoverable load.
- Due to the configuration of the current distribution system, there are limited options for load transfers in emergency situations or for maintenance.
- Increased reliability with remote supervisory control and load monitioring.

Distribution Line Component:

- Install two new underground distribution exits from Limberlost station totaling 500 feet in length using 3-1000 AL & 1-4/0 Cu cable.
- Reconfigure existing distribution system to create two circuits served out of Limberlost Station.

Benefits of the Project:

- Improves the ability for contingency transfers.
- All distribution load becomes fully recoverable.
- SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.
- New equipment is more reliable for customers and more easily maintained.

Hartford City Area – Montpelier Underbuild

Project Description:

- Rebuild 0.63 miles of underbuilt three phase distribution line on the Monpelier Station Montpelier circuit in conjunction with a transmission line rebuild.
- ISD =2019; 1 year project timeline.

Justification / Need for the Project:

Rebuild of the distribution line in the Montpelier area is needed due to concerns of reliability.The existing distribution line consists of poles that are past their expected life span and obsolete conductor.

Distribution Line Component:

Rebuild approximately 0.63 mile of three phase distribution line using 3-556 AL & 1-4/0 AA conductor to eliminate obsolete conductor and increase line capacity.

Benefits of the Project:

Increased reliability and operational flexibility through new assets and increased circuit tie capability.

South Bend/Elkhart Area – Muessel Station

Project Description:

This project is a jointly developed I&M transmission and distribution reliability enhancement project to rebuild and convert the Drewry's station from 34.5kV to 69kV. The project will rebuild the station adjacent to the current station due to loading and space constraints.
Relocate 4-12kV feeder exits to the new Muessel station, extend to connect to existing circuits.
ISD = 2019; 1 year project timeline

Justification / Need for the Project:

The voltage conversion is to address single contingency overload on the South Bend-Saint Mary's 34.5 kV line for the outage of West Side – Drewry's 34.5 kV line under 2019 summer simulated conditions.

- This voltage conversion will require a station layout revision and relocation of existing 12 kV exits.

Distribution Line Component:

- The new station layout will require all three 12kV feeder exits to be relocated and extended to existing circuit configuration utilizing 3-1000MCMAL + 1 – 4/0Cu EPR cable.

Benefits of the Project:

- The project relieves reliability concerns of aged equipment and improves the ability for contingency transfers by having in-phase circuit ties.
- Integrating circuit breaker controls into SCADA will contribute to the strategic goal of modernizing the distribution grid.

Muncie Area – Fuson Station

Project Description:

- Build a new 138/12 kV station, called Fuson.
- Install two new 138/12 kV, 25 MVA transformers.
- Install two new distribution bays.
- Install six 12 kV distribution circuit breakers and exits
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2020; 2 year project timeline.

Justification / Need for the Project:

Construction of the Fuson distribution station is due to concerns of capacity, reliability, and the expection of load growth. The following are drivers for this project:

- The Fuson Station site is located in a capacity contrained area which limits the opportunities for load transfers during emergency situations.
- Transitioning the existing distribution load to 138 kV transmission sources reduces the need to momentarily interrupt customers for transfers due to out-of-phase circuit ties.
- Currently, 10 MVA of load at the adjacent Utica Station is unrecoverable.
- Increased reliability with remote supervisory control and load monitioring.

Distribution Line Component:

- Install six new underground distribution exits from Fuson station totaling 1,850 feet in length using 3-1000 AL & 1-4/0 Cu cable.
- Reconstruct 3.7 miles of existing 3-phase overhead line using 3-556 AL & 1-4/0 AA conductor.

Benefits of the Project:

- The additional capacity added at Fuson Station relieves loading in this capacity constrained area.
- Relieves reliability concerns of aged equipment and improves the ability for contingency transfers.
- Elimination of out-of-phase circuit ties reduces frequency of momentary outages to customers.
- SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.
- New equipment is more reliable for customers and more easily maintained.

Muncie Area – Rosehill Station

Project Description:

- Install a second 12 kV circuit breaker at Rosehill Station.
- Create a dedicated 12 kV circuit to the new Marathon Pipeline pumping facility near Anderson.
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2020; 2 year project timeline.

Justification / Need for the Project:

Installation of a second 12 kV circuit breaker and circuit is due to concerns of reliability and power quality. The nature of the new customer's load could result in voltage fluctuations on the distribution system that could be objectionable to other customers.

Distribution Line Component:

Establish a dedicated 12 kV circuit the the new Marathon Pipeline's pumping facility.

- Reconstruct 3.25 miles of existing 3-phase overhead line to a double circuit using 3-556 AL & 1-4/0 AA conductor for each circuit.

Benefits of the Project:

- The dedicated 12 kV circuit to the new customer will electrically isolate the new facility from neighboring customers resulting in a limited possibility for objectionable voltage fluctuations.
- SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.

Muncie Area – Royerton Station

Project Description:

- Install a Distribution Remote Terminal Unit (DRTU)
- ISD =2020; 2 year project timeline.

Justification / Need for the Project:

Installation of a DRTU at Royerton is for concerns of reliability.The following are drivers for this project:

- A DRTU is necessary for the deployment of Distribution Automatic Circuit Reconfiguration (DACR).
- DACR provides the highest reduction in SAIDI by automatically, and in real time, identifying and isolated faulted sections of the scheme.

Distribution Line Component:

None

Benefits of the Project:

Improved fault location, isolation and service restoration when accompanied by DACR.

Butler Area – SDI Improvements D-line

Project Description:

- Rebuild and multiphase of 1.5 miles of distribution line on the Butler Station Rural 12 kV Circuit in conjunction with a transmission line build.
- ISD =2020; 2 year project timeline.

Justification / Need for the Project:

Rebuild and multiphasing of distribution line in the rural Dekalb county area is needed due to concerns of reliability. The following are drivers for this project:

- Several single-phase lines in the rural Butler area are heavily loaded resulting in a lack of contingency transfers.
- The existing distribution line consists of poles that are past their expected life span and obsolete conductor.

Distribution Line Component:

- Rebuild approximately 1.5 mile of single phase distribution line to three-phase using 3-556 AL & 1-4/0 AA conductor.
- Diversify the existing single-phase load amongst the three phases.

Benefits of the Project:

- Increased reliability and operational flexibility.
- Improved phase balance allows better utilization of station capacity.

Muncie Area – Strawboard Station

Project Description:

- Install a 12 kV distribution bay with regulated bus at Strawboard Station to replace the existing 34.5/12 kV Bosman Station.
- Install install three 12 kV circuit breakers and exits.
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2020; 2 year project timeline.

Justification / Need for the Project:

Construction of distribution facilities at Strawboard Station is due to concerns of reliability. The following are drivers for this project:

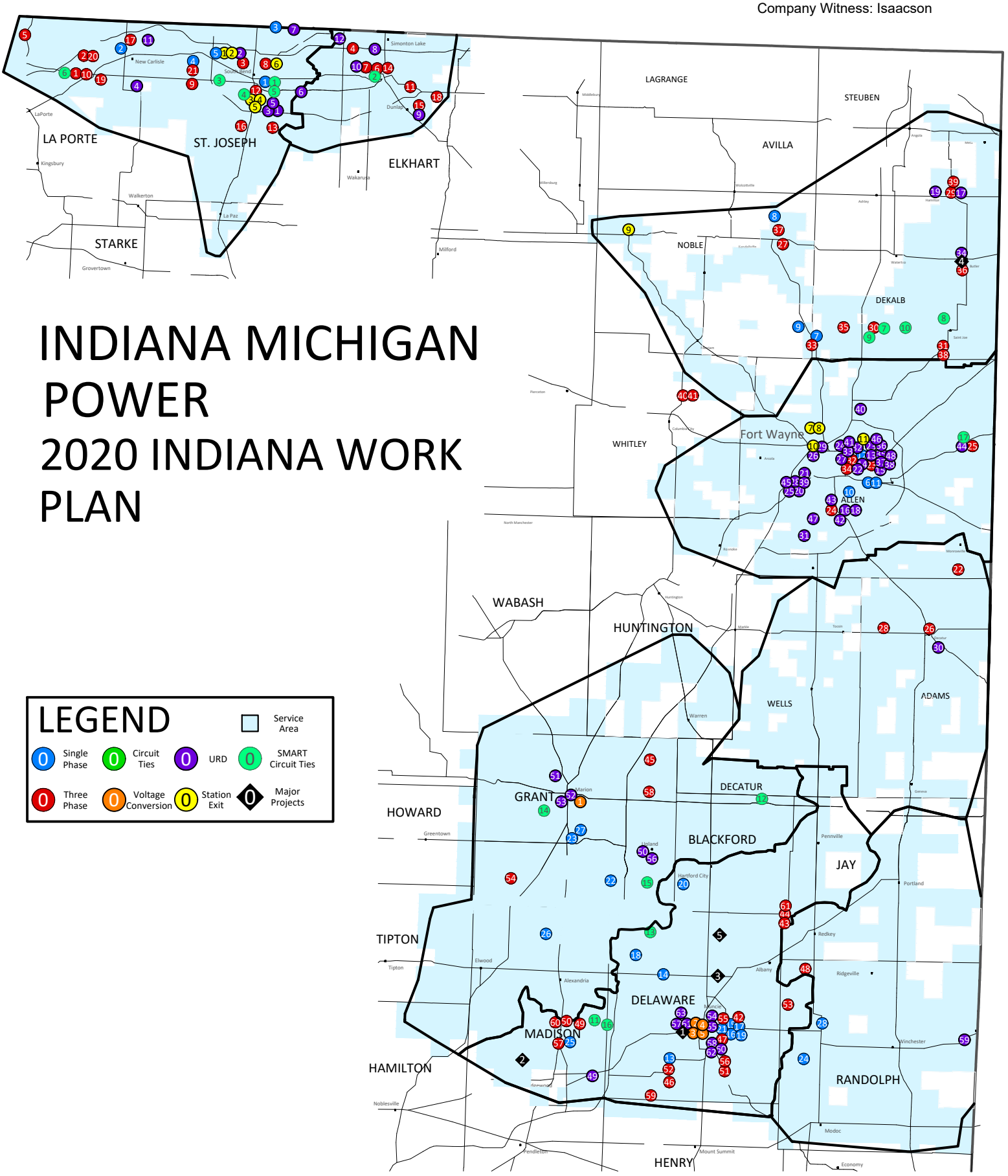
- Bosman Station is located in a regulatory floodway presenting a risk to reliability and safety.
- Construction of Strawboard Station allows for the conversion of the subtransmission system from 34.5 kV to 69 kV.
- Transitioning the existing Bosman distribution load to a 69 kV transmission source eliminates the need to momentarily interrupt customers for transfers due to out-of-phase circuit ties.
- Few circuit ties in the area limit load transfer cababilities.
- Increased reliability with remote supervisory control and load monitioring.

Distribution Line Component:

- Install three new overhead distribution exits 200 feet in length each using 3-556 AL & 1-4/0 AA conductor.

Benefits of the Project:

- Allows for the retirement of Bosman Station and conversion of the subtransmission system to 69 kV thus modernizing the system.
- Relieves reliability concerns of aged equipment and improves the ability for contingency transfers.
- Elimination of out-of-phase circuit ties reduces frequency of momentary outages to customers.
- SCADA capabilities allow enhanced monitoring and additional switching and sectionalizing abilities done remotely, reducing overall outage identification and restoration time.
- New equipment is more reliable for customers and more easily maintained.



INDIANA MICHIGAN POWER

2020 INDIANA WORK PLAN

LEGEND

Service Area				
Single Phase	Circuit Ties	URD	SMART Circuit Ties	
Three Phase	Voltage Conversion	Station Exit	Major Projects	