I&M Exhibit: _____

Cause No. 45576

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

DAVID S. ISAACSON

Content

DIRECT TESTIMONY OF DAVID S. ISAACSON
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

I. Introduction

Q1. Please state your name and business address.

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

Q2. By whom are you employed and in what capacity?

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

Q3. Please describe your educational and professional background.

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.

Q4. What are your responsibilities as Vice President of Distribution Operations?

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 I&M's 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 including vegetation management. I report directly to I&M's President.

Q5. Have you previously submitted testimony in any regulatory proceedings?

Yes. I submitted testimony before the Indiana Utility Regulatory Commission (Commission) in Cause No. 43663, Cause No. 44542, and Cause No. 45235.

II. Purpose of Testimony

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

The purpose of my testimony is to provide an overview of I&M's distribution system and to support its 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 (the Plan), a comprehensive, forward-looking capital and operations plan under which the Company continues to make significant investments to maintain and improve the reliability of its distribution system, to enhance safety, and to leverage technology to benefit the grid. I will address I&M's Advanced Meter Infrastructure (AMI) and Enhanced Conservation Voltage Reduction (Enhanced CVR) deployment. I will then summarize and support the level of distribution operation and maintenance (O&M) expenses during the historical base period from January 1, 2020 through December 31, 2020, and the projected level of distribution O&M expenses during the forward-looking test period of January 1, 2022 through December 31, 2022 (Test Year). I also support forecast distribution capital investment from January 1, 2021 through December 31, 2022 (Capital Forecast Period).

Q7. Are you sponsoring any attachments in this proceeding?

I am sponsoring the following attachments:

Attachment DSI-1	Vegetation Management Plan (2021-2022)
Attachment DSI-2	Asset Renewal Management Plan
Attachment DSI-3	Combined Projects Management Plan
Attachment DSI-4	Grid Modernization Management Plan
Attachment DSI-5	Enhanced CVR Management Plan

Q8. Were the attachments that you are sponsoring prepared or assembled by you or under your direction?

Yes.

Q9. Please explain how I&M's support for the forecast Distribution Management Plan expenditures is organized in I&M's case-in-chief.

The Distribution Management Plan section of my testimony contains:

- A definition of I&M's Distribution Management Plan
- Key objectives and goals of the Plan
- Explanation of how activities in the Plan will be completed
- Explanation of how cost estimates were developed
- Description of the Categories and Activities included in the Plan
- Detailed Section on each Category and Activity in the Plan

Figure DSI-4 includes references to the appropriate figures and attachments in my testimony that provide additional details for each activity in the Plan. In summary, the attachments to my testimony provide a comprehensive list of each project, including location, work scopes (measured in feet, miles, or units), implementation year (2021 and 2022), and cost by year (2021 and 2022) for each activity in the Plan.

In addition to my testimony and attachments, account level detail of distribution plant activity for forecasted plant balances is provided by Company witness Heimberger in WP-NAH-5.

Forecast distribution capital expenditures are included in I&M's "capital project life file," which is included in Company witness Lucas' workpaper WP-DAL-2. This workpaper contains a project-by-project line item support for all forecast distribution capital costs, including a project name breakdown between transmission and distribution, project type, and forecast expenditures by month for 2021 and 2022.

The project life file also includes detailed monthly cost projections for plant in service and construction work in progress expenditures for the distribution capital projects included in the forecast.

Q10. Please summarize your testimony.

I&M Distribution Operations is realizing improvement in reliability performance, consistent safe operations, and control of its operating costs. The process of identifying, qualifying, and prioritizing program and project work is showing positive results and, with the increasing use of technological improvements, I&M is building its resiliency.

Vegetation management remains the most impactful investment I&M can make to improve overall reliability. I&M is on schedule to complete the initial four-year program by the end of 2021. Continuation of this program, starting with the next four-year rotation period in 2022, is equally as important to further improve reliability and avoid returning to a system plagued by controllable vegetation-caused service interruptions.

Ongoing investments in the distribution system will ensure a continuation of the positive results our customers are realizing. As such, I&M remains focused on three key principles reflected in the investment portfolio detailed in my testimony:

- Improving system reliability today and in the future,
- Utilizing technology to increase operational efficiency and create a more optimized system, and
- Positioning I&M for changes in regulatory requirements and customer expectations.

Using these principles, the Company has prepared a portfolio of programs and projects under its Distribution Management Plan necessary to ensure the Company's distribution system operates in a safe manner, provide for continuous improvement in reliability, and enhance customer experience.

In addition, the Company plans to replace its existing AMR metering infrastructure with AMI metering technology. The move from AMR to AMI meters provides significant improvements in customer service, as well as additional operational benefits. These benefits, combined with the general obsolescence of the Company's current AMR metering system, demonstrate that the Company's investment in AMI technology is necessary to continue to provide safe and reliable service to its customers.

Finally, the Company proposes to expand CVR technology (Enhanced CVR) on its distribution system. This technology allows voltage on specific circuits to be reduced to optimize efficiency of the delivery voltage and save a marginal amount of capacity and energy, which taken cumulatively, can result in reduced cost of service to customers. Thus, the Company's proposed Distribution Management Plan, including AMI, and Enhanced CVR deployment, represents prudent investment necessary to allow the Company to continue to provide safe, reliable and resilient service to its customers.

Major areas of distribution O&M expense are: Ongoing O&M, Vegetation Management O&M and Major Storm O&M. The Test Year level of O&M expense is reasonable and 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 Major Storm Reserve helps I&M maintain the reliability of its distribution system and ensures that I&M customers pay rates that reflect the true costs of a major storm – no more and no less.

III. Distribution System Overview

Q11. Please provide an overview of I&M's distribution system in Indiana.

I&M serves approximately 470,000 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 193 substations, 15,200 miles of distribution lines consisting of 12,100 miles of overhead line primarily supported on wood poles, and 3,100 miles of underground cable. I&M serves four Indiana cities via underground networks – Fort Wayne, Muncie, Elkhart, and South Bend.

Q12. How would you generally characterize I&M's existing distribution assets?

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 1960's and 1970's when I&M's territory experienced growth and 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. Older assets can be harder to replace when they fail because it is often difficult to obtain available parts for aging equipment. Lastly, aged assets also pose potential safety risks from failures during operation.

Q13. Has I&M seen any improvements in the reliability of its distribution system since its last Indiana base rate proceeding?

Yes, I&M is experiencing notable improvements in its distribution system since its last Indiana base rate proceeding and my testimony provides evidence of those improvements. Specifically, I&M has seen improvements in its reliability metrics as described later in my testimony.

IV. Reliability Metrics and System Performance

Q14. How does the Company measure the reliability of its distribution system?

I&M primarily uses the System Average Interruption Duration Index (SAIDI), the System Average Interruption Frequency Index (SAIFI), and the Customer Average Interruption Duration Index (CAIDI) to gauge service reliability. These are the primary indices used in the annual I&M Electric Reliability Report filed in Indiana and are used across the electric utility industry in general. 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.

The IURC's definitions for these terms are consistent with the IEEE Standard.

Q15. Please summarize the Company's recent reliability performance in Indiana.

I&M strives to provide customers with the best reliability it can with the existing resources and system conditions. Investments in the distribution system through the Company's Distribution Management Plan are resulting in reliability improvements. In the past year, from the end of 2019 to the end of 2020, overall system reliability, measured in terms of SAIDI without Major Event Days (MED) improved by 18.6%, with notable improvements in vegetation, failed equipment and station/transmission line caused events. These improvements in reliability affirm that the type of work I&M has been performing is making a positive difference. Continuation of these activities, implemented under I&M's Distribution Management Plan, mitigates ongoing challenges, such as aging assets and vegetation.

Q16. What are the primary causes of outages in I&M's Indiana service territory?

As shown in *Figure DSI-1,* the number of events and the customer minutes of interruption (shown in terms of SAIDI) specific to vegetation and equipment failures have improved in 2020. However, they remain the primary causes of outages in I&M's Indiana service territory.

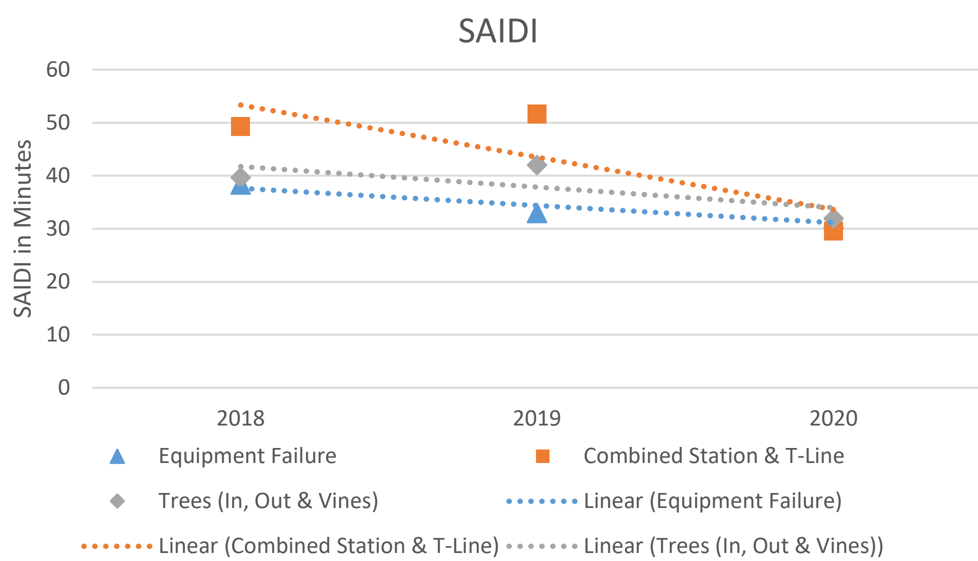
Figure DSI-1. Principal Outage Causes In SAIDI (Excluding MEDs - Indiana)

Cause	2016	2017	2018	2019	2020	Avg
Vegetation*	39.1	45.5	39.7	42	31.9	39.6
Equipment Failure	36.2	30.1	38.3	33	31.8	33.9
Station	13.4	28	26.5	31.1	22	24.2
Vehicle Accident	18.6	25.9	19.1	27	24.6	23.1
Transmission Line	10.1	11.8	22.7	20.5	7.5	14.5
Unknown	9.7	7.2	7.3	9.5	5.7	7.9
Scheduled	7.1	7.4	8	6.9	6.6	7.2
Other**	10.3	3	2.7	12	14.4	8.5
Lightning	5.4	4.2	7	2.6	4.2	4.7
Animal	3	3.1	4.4	4.9	5.2	4.1
Total	152.9	166.3	175.7	189.4	154.1	167.7
* 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.						

Q17. Has I&M observed improvements in its system overall?

Yes. In the key areas of historical performance issues, including vegetation, failed equipment, and station/transmission lines, I&M's SAIDI reliability performance is improving. These are trending favorably when comparing the time between 2018-2020 specific to these areas, as shown in *Figure DSI-2*.

Figure DSI-2. Reliability Improvement from 2018-2020



Below is a summary specific to these areas of improvement:

- *Vegetation* - I&M began a comprehensive and systematic vegetation management program at the beginning of 2018**.** The reduction in outage cases and customer affected by these events has improved over that same period of time. 2021 represents the fourth and final year of the initial program cycle and 2022 begins the start of the next four-year cycle described later in my testimony.
- *Failed Equipment* - I&M has continued to evaluate and address issues attributed to an aging distribution system by identifying the areas of concern, determining the appropriate manner to address them, incorporating resiliency improvements (via hardening design standards and grid modernization), and prioritizing work to provide overall improvement to I&M customers. This approach is showing a positive improvement in system performance, which is an ongoing effort. The comprehensive listing of reliability improvement projects for 2021 and 2022 is detailed later in my testimony.

- *Transmission & Station Events* - Coinciding with the investments that have been made in recent years to upgrade and improve the transmission system within I&M's Indiana service area, there have been both technology improvements and process improvements, such as how the Company schedules and manages projects to avoid fractionalizing the system.

Q18. Does I&M have any input from customers regarding their impression of system performance?

Yes. Results from the recent J.D. Power 2020 Electric Utility Residential Customer Satisfaction Study shows incremental improvement in the Power Quality & Reliability elements, as evaluated by those customers taking the survey. Key aspects of this evaluation include the following:

- For the third consecutive year, I&M has improved in its overall power quality and reliability rating, going from a score of 782 in 2018, to 783 in 2019 and 798 in 2020.
- I&M is now ranked (at 798) above its collective peers, measured as the "Midwest Large" group (score of 789)
- The J.D. Power survey identified the following attributes that have contributed to this favorable standing against the peer group, including:
    - Avoiding lengthy outages
    - Supplying electricity during extreme temperatures
    - Providing quality electric power
    - Keeping customers informed about an outage
    - Avoiding brief interruptions
    - Promptly restoring power after an outage

As described above, I&M is rated above average for Midwest Large Utilities and is positioned well among our peers, indicating that our efforts are having a positive impact on our customers.

Q19. Is I&M committed to further improving its distribution system?

Yes. The primary basis for many of the projects planned for 2021 and 2022 is improving reliability and sustaining a good overall system performance, which requires ongoing, active engagement and investment. I&M cannot pause in these activities for the simple facts that trees continue to grow, assets continue to age and customers continue to expect reliable service. Although the total number of events and the inconvenience caused by these incidents has declined over the past two years, I&M remains committed to maintaining and further improving customer experience through the ongoing efforts outlined in my testimony.

V. Distribution Management Plan

Q20. What is I&M's Distribution Management Plan?

The purpose of the Plan is to define and itemize a portfolio of programs and projects that ensure our system operates in a safe manner, provides for continuous improvement in reliability, and enhances our customers' experience. In this collective portfolio of work, the programs represent specific work activities that are perpetual in nature such as vegetation management (once a four-year cycle is completed, it begins again). Projects represent activities with a defined start and end date, such as the AMR to AMI conversion.

My testimony focuses on the two-year period from 2021-2022 of the Plan, which reflects the Capital Forecast Period.

Q21. What are the key objectives and goals of the Plan?

I&M's plan is focused on six key objectives and goals:

1) *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.

2) *Improve the customer experience* – A key principle for I&M's distribution planning efforts is focusing on the customer experience. This means being prepared to extend new service to customers constructing facilities within I&M's service territory. It also means establishing programs and projects aimed at reducing the number of outages, selecting investments that allow the Company to respond and restore service quicker when an outage does occur, and giving customer's tools and information that will allow them to use electricity more efficiently.

3) *Enhance system resilience* - The Plan focuses on enhancing the resilience of the system through system upgrades as well as leveraging grid modernization technologies which will automate and expedite the restoration of power post unplanned events. With the emergence of energy storage technologies, microgrids, and other innovations, there will be greater opportunities in the future to bolster the resilience of the I&M distribution system.

4) *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 distributed energy resources; to be able to respond to generation or load changes; to maintain power quality and reliability; and to ensure real-time, dynamic communication with these technologies. Changing dynamics in today's energy markets anticipate this capability.

5) *Maintain system 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 changing demands on the distribution system, and changes in equipment and technology.

6) *Enhance data collection and utilization* – I&M is installing 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. 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.

Q22. How did I&M develop the programs and projects included within its Plan?

I&M developed the Plan by focusing on several inputs to determine the programs and projects that 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 use their knowledge 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 incidents. 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. Results from these are used 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 if left unmitigated.
- *Industry Data* – I&M uses available industry data and analyses to provide information on equipment failure rates and projected obsolescence of equipment. For instance, I&M, through 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 is coupled with I&M's own analysis on failure rates to inform the project selection process.
- *New Technologies* – Improvements in distribution hardware and infrastructure, such as smart grid technologies, have been incorporated into the Plan. In addition to operational improvements, these new technologies will allow I&M to address changes in how customers meet their energy needs, which fundamentally requires an interactive, two-way operational grid. Several of these grid modernization technologies are becoming essential in ensuring that the Company can maintain safety and reliability through effective planning as the distribution grid becomes more versatile due to factors such as greater penetration of distributed energy resources.

Q23. Are there any other factors I&M considers in implementing the Plan?

Yes. I&M continuously monitors and factors in the following elements that influence both the actual work and the timing throughout the calendar year:

- *Customer Service and Public Project Relocation (PPR) Projects* – 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, and the like. Customer service and PPR projects (typically initiated by local, county and state governing authorities) often arise throughout the year, requiring crews to be assigned in order to meet in-service deadlines. I&M factors this into its Plan and estimates both the volume of this work and the timing, based on historical experience and future projections. Because these activities are not perfectly predictable, in terms of volume, scope, location and timing, a degree of flexibility is required to allow these customer service activities to be appropriately prioritized.
- *Workforce Availability* – I&M uses a mix of internal and external labor in order to execute its distribution projects in a cost effective manner. In recent years, the craft labor market has realized high demand within the I&M service territory, making it necessary to plan further in advance and remain actively engaged with market changes. Similarly, weather events often cause periodic delays in work completion while crews work to repair damage on I&M's system or other utility systems (via Mutual Assistance). I&M factors a certain amount of these interruptions into the Plan schedule, adjusting as necessary when more time is taken for these activities than projected. This work, as with Customer Service, takes a priority and is reactive by its nature.
- *Materials Availability* – Material availability and lead times for ordering materials fluctuate for various reasons. More recently, issues stemming from COVID-19 created shortages in certain construction materials, requiring schedule adjustments. Likewise, having a broad portfolio of work enables the Company to adjust if/when necessary to address such issues.

- *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 – also influences the timing of project work. These considerations are factored into I&M's planning and are reviewed weekly so that assignments can be adjusted as schedule changes occur.
- *Financial Parameters* – The costs of distribution projects are also a key factor in I&M's distribution planning.

Q24. How does I&M balance the investments in each of the areas included within the Plan?

The portfolio of programs and projects takes into consideration the balanced needs of customers, available resources (including design and construction talent as well as materials) and future demands anticipated on the system. It considers both reliability (such as with the vegetation management program and asset renewal projects) and resiliency such as Distribution Automation Circuit Reconfiguration (DACR) and grid sensors.

Q25. How does I&M assign value and prioritize these projects?

Given the wide variety of potential work that can be done to enhance and improve operational performance, it is reasonable that a consistent manner of project valuation and subsequent selection/prioritization is used. To perform this comparative evaluation, and evaluate asset renewal and most grid modernization projects (all except AMI and Enhanced CVR) against another, I&M utilizes the Company's Project Value Ranking (PVR) methodology. The process relies upon the various inputs to create a collective list of conceptual projects, which are each evaluated and assessed in the PVR tool. This tool scores and ranks the projects based on risk factors, such as reliability, safety and financial. The resulting outcome from evaluating the risk factors associated with a project is provided, for comparative purposes, in customer minutes of interruption (CMI).

It is important to note that the PVR output is one of the factors used to make the final project selection. Other considerations, such as timing of projects, new/updated performance and resource availability weigh into the planning process.

Q26. How does I&M develop cost estimates for the Plan?

The cost estimates for the programs in the Distribution Management Plan are developed from the body of experience I&M has gathered by performing this work for years. This experience provides a basis for both the labor and materials required, forming the parametric estimate specific to each particular unit and/or type of work. These unit cost estimates incorporate labor, material, stores, equipment and related overheads. I&M then creates project scopes, including equipment specifications and construction standards, utilizing input from I&M employees who have day-to-day responsibility for operating and maintaining the distribution system. Once the scope is finalized, it is combined with the parametric estimates to determine the functional project cost estimate.

Q27. How does I&M monitor and evaluate the progress and costs of the Plan?

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

Q28. What are the main categories of investments in the Plan?

The Plan involves four primary categories of investments, which are implemented through five activities, as shown in *Figure DSI-3.*

Figure DSI-3. Distribution Management Plan Categories & Activities

Category	Activity	Details	Description
Reliability Enhancement	Vegetation Management	Attachment DSI-1 - Vegetation Management Program 2021-2022	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	Attachment DSI 2 - Asset Renewal Projects 2021 & 2022	I&M has developed a suite of programs to replace aging infrastructure and harden the system to improve reliability and resiliency.
Distribution Asset Management	Combined Projects (Capacity Additions, Station & Line Components)	Attachment DSI-3 - Combined Projects 2021-2022	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. Formerly referred to as "major projects," "Combined Projects" more appropriately describes these projects, as they are a collection of projects that vary in size.
Risk Mitigation	Infrastructure Inspection Programs and Underground Locates	Figure DSI-11 - Risk Mitigation Programs 2021 & 2022	I&M performs inspections designed to identify potential issues on the distribution system, promoting public safety.
Grid Modernization	Resiliency Improvement via System Response and Monitoring Projects	Attachment DSI-4 - Grid Modernization Projects 2021-2022 Attachment DSI- 5 - AMR Changes 2018 - 2020 Attachment DSI-6 - Enhanced CVR 2021-2022	I&M has identified technologies that will help I&M monitor, protect, and improve the operation and resiliency of its distribution system. AMI, Enhanced CVR, Sensors, DACR and Smart Reclosers are project groups included in this activity.

A. Reliability Enhancement Category: Vegetation Management

Q29. Please summarize the status of the Company's vegetation management program reflected in the Capital Forecast Period and Test Year O&M.

As discussed in Cause Nos. 44967 and 45235, I&M's vegetation management program involves moving from a reactive approach to managing vegetation (trees, brush, and vines) on a systematic, cycle-based approach. This systematic approach began with an initial four-year reclamation period (2018-2021) that involves two components. First, I&M is expanding overhead conductor clearance zones (the space surrounding a distribution line) that typically should be free from vegetation. I&M is continuing to widen narrow clearance zones and is in the fourth and final year of this part of the program. Reflective of this transition, the amount of capital funds needed for vegetation management drop significantly in 2022. Second, for clearance zones that have been adequately widened, I&M applies remedial vegetation management to maintain clearance zones and rights-of-ways to their previously prescribed width.

I&M is on schedule to complete the initial four-year program by the end of 2021. As mentioned above, I&M will begin its second four-year vegetation management cycle in 2022. *Figure DSI-4* summarizes results for the three-year historical period of 2018 – 2020 and forecasts work through 2022 (the Test Year). *Figure DSI-5* shows I&M's historical and forecast vegetation management costs.

Figure DSI-4. Vegetation Management Work Plan (Overhead Primary Line Miles)

	2018	2019	2020	**Avg ('18-'20)**	2021	2022
Clearance Zone Widening	646	659	868	**724**	723	0
Remedial Maintenance	1,666	1,904	1,661	**1,744**	1,405	2,383

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

Cost Type	2018	2019	2020	2018-2020 Average	2021	2022
Capital	$8,694	$11,637	$12,236	$10,856	$9,249	$3,604
O&M	$17,442	$18,090	$14,923	$16,818	$16,240	$16,022

Further detail regarding the vegetation management work plan can be found in Attachment DSI-1*,* which presents line miles of clearance zone widening and remedial trimming by circuit, total line miles, and maps of the locations of vegetation management activity.

Q30. What are the drivers and benefits of I&M's vegetation management program?

Vegetation management remains the most impactful investment I&M can make to improve overall reliability. During the first three years of this initial four-year cycle-based program, I&M's vegetation caused SAIDI has favorably declined by nearly 30% (from the end of 2017 to the beginning of 2021). Continuation of this program, starting with the next four-year rotation period in 2022, is equally as important to further improve reliability and avoid returning to a system plagued by controllable vegetation-caused service interruptions.

Q31. What amount has I&M spent in vegetation management expense since its last base rate case?

As shown above in *Figure DSI-5*, I&M has averaged over $16.2 million in vegetation management expense over the first three years of the initial four-year cycle (2018-2020) and anticipates the same will hold true upon completion of the four-year cycle this year (2021).This is consistent with the Commission's May 11, 2020 Order in Cause No. 45235.

When looking at the O&M expenditures by year, 2020 was impacted by unusual circumstances. There are two primary reasons for this: First, the COVID-19 global pandemic created workplace restrictions, safety protocols, employee absenteeism and turnover (specific to our business partner forestry crew resources), which affected production levels. Second, I&M provided a substantial amount of off-system mutual assistance in 2020 due to the number of significant events (primarily hurricanes) that affected other utilities, pulling resources away from I&M's work. Together, these unique situations made acquiring additional resources difficult in 2020.

Q32. Please summarize I&M's experience from the initial four-year vegetation management cycle?

I&M will successfully complete the initial four-year vegetation management cycle in 2021 in spite of the challenges it faced in 2020. The cycle accomplished the widening of clearance zones around energized conductors and remedial clearing of the previously cleared right-of-way. The next cycle, which will begin in 2022, will continue to focus on remedial clearing of the right-of-way and will require less O&M and capital to complete. The Test Year O&M spend is projected to be less due to improved efficiencies. During this same period, capital needed for vegetation management will drop by more than 60%.

B. Reliability Enhancement Category: Asset Renewal

Q33. Please summarize I&M's asset renewal projects reflected in the Capital Forecast Period and Test Year O&M.

I&M's asset renewal projects focus on replacing aged infrastructure with the purpose of ensuring the distribution system remains reliable and safe:

- *Overhead Line Rebuild Projects* – I&M constructs/reconstructs overhead lines and associated equipment to current design standards. Replacement of aged overhead facilities reduces the likelihood of unplanned outages due to equipment failure, and subsequently enhances resiliency through use of current standards. 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 Projects* – I&M replaces poles that no longer appear to have the integrity (based on condition of the pole) needed to support the current overhead infrastructure. 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 Transformer Replacement Projects* – I&M identifies deteriorated and unjacketed cable in need of replacement and simultaneously replaces live-front padmount transformers.
- *Underground Station Exit Cable Replacement Projects* – For these projects, I&M identifies and replaces aging underground station exit cables. A failure on this critical portion of the circuit interrupts service to all customers served on the affected circuit.
- *Underground (UG) Network Rebuild Projects* – I&M replaces aging network secondary and primary components in the I&M South Bend, Elkhart, Fort Wayne, and Muncie networks.

Q34. What are the drivers and benefits of the asset renewal projects?

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 projects discussed here. Without these planned projects, I&M would experience more asset failures and the quality of service to customers would unnecessarily suffer. Similarly, addressing potential issues prior to failure allows for better assessment of infrastructure design, non-reactive project scheduling, and lower costs for projects. Looking forward, AMI will allow for real-time monitoring of service delivery to each customer's premises, further enhancing the project selection and scoping process.

Q35. What are the work scope and timing of I&M's asset renewal projects?

Figure DSI-6 shows the cumulative amount of work planned, by year, specific to the asset renewal and reliability projects scheduled for the 2021-2022 Capital Forecast Period:

Figure DSI-6. Asset Renewal Cumulative Work Scope (Indiana)

	Units	2021	2022
Overhead Rebuild –			
Single Phase Line Rebuild	Miles	30.7	33.4
Three Phase Line Rebuild	Miles	16.4	14.2
Circuit Ties	Miles	6.6	13.8
Voltage Conversion	Miles	1.9	2.3
Sectionalizing	Units	7.0	7.0
Recloser Replacement	Units	33	19
Capacitor Replacement	Units	24	22
Porcelain Cutout & Lightning Arrester Replacement	Units	3,819	2,411
Crossarm Replacement	Units	254	268
Pole Replacement/Reinforcement	Units	1,199	1,276
URD Cable and Live-Front Transformer Replacement	Miles	13.8	13.6
Underground Station Exit Cable Replacement	Feet	2,362	3,549

Q36. What are the costs of the asset renewal projects?

Figure DSI-7 provides the projected capital expenditures for the asset renewal projects over the 2021-2022 Capital Forecast Period.

Figure DSI-7. Asset Renewal Projects Capital Expenditures (Indiana -$000 - Excluding AFUDC)

	2021	2022
Overhead Rebuild –		
Single Phase Line Rebuild	$2,407	$2,700
Three Phase Line Rebuild	$4,389	$3,910
Circuit Ties	$1,238	$2,663
Voltage Conversion	$587	$710
Sectionalizing	$173	$168
Recloser Replacement	$175	$101
Capacitor Replacement	$270	$257
Porcelain Cutout & Lightning Arrester Replacement	$1,253	$815
Crossarm Replacement	$623	$679
Pole Replacement/Reinforcement	$4,511	$4,947
URD Cable and Live-Front Transformer Replacement	$1,686	$1,721
Underground Station Exit Cable Replacement	$546	$846
UG Network Rebuild Program	$4,139	$5,665
Total	$21,997	$25,182

Q37. Please describe Attachment DSI-2.

Attachment DSI-2 provides a description of each project by circuit, the amount of line miles and units of the projects, the estimated labor and material costs, and the locations of the affiliated projects. I discuss how these cost estimates were prepared in Question #26.

C. Distribution Asset Management Category: Combined Projects

Q38. Please summarize I&M's Combined Projects reflected in the Capital Forecast Period and Test Year operating expenses and the drivers and benefits for these projects.

Each year, I&M completes various distribution projects, termed "Combined Projects" that are not included in the Reliability Enhancement, Risk Mitigation or

Grid Modernization Categories listed in *Figure DSI-3.* 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),
- improve outage recovery, to replace or upgrade aging or obsolete station equipment,
- implement supervisory control and data acquisition (SCADA), and
- perform voltage conversions of select stations and distribution circuits.

To develop these combined projects, several I&M groups, including planning, engineering, and the Distribution Dispatching 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 performance and equipment conditions, I&M prioritizes and selects the combined projects that help improve the reliability of the system, increase the ability to serve changing load, promote safety and enhance the technological capabilities of I&M's system.

Q39. What are the work scopes and timing of I&M's planned Combined Projects?

I&M's Combined Projects that are planned for 2021-2022 are detailed in Attachment DSI-3. The details included in this attachment include the list of planned projects for 2021 and 2022, descriptions of each project, work scopes for each project, estimated cost of each project and maps (by year) depicting the geographical location of each project.

Q40. What are the costs of the Combined Projects?

Figure DSI-8 provides I&M's projected capital expenditures for Combined Projects that will be placed in-service over the Capital Forecast Period.

Figure DSI-8. Combined Project Capital Expenditures (Indiana - $000- Excluding AFUDC)

Combined Projects	2021	2022	In-Service Year
West End Station	$1,597	N/A	2021
Arnold Hogan Station	$1,699	N/A	2021
Blaine Street Station	$5,461	N/A	2021
Hartford City D-Line	$1,311	N/A	2021
Dean Station	$7,311	N/A	2021
Wes Del Station	$4,635	N/A	2021
New Carlisle Station	$309	N/A	2021
BootJack Station	$353	N/A	2021
Marquette Station	$957	N/A	2021
Muessel Station	$238	N/A	2021
Lydick D line	$412	N/A	2021
SDI Improvements D-Line	$231	N/A	2021
Upland Station	$1,463	N/A	2021
Pennville Station	$170	N/A	2021
Elwood Station	$5,851	$1,543	2022
Ameriplex Station	$3,941	$2,837	2022
Colfax Station	$585	$1,269	2022
McGalliard Rd Station	$300	$796	2022
Jay Station	$1,199	$1,863	2022
Totals	$38,023	$8,308	

D. Risk Mitigation Category

Q41. Please summarize the Company's risk mitigation programs reflected in the Capital Forecast Period and Test Year operating costs.

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

- *Underground locates* – Per statutory rules, I&M is required to locate its underground facilities, when requested, within two working days in order to protect the public from inadvertently digging into buried energized facilities owned by the Company. I&M strictly adheres to the statutory requirements around timely and accurate location identification of its underground facilities and utilizes trained, responsive business partners to perform this work.
- *Pole inspections* – To ensure the integrity of its overhead pole plant, I&M systematically inspects its distribution poles on a ten-year cycle. Those poles that are determined to meet ANSI strength requirements, based on the height, diameter, and class of the pole, are treated with preservatives to prevent any further degradation from potential decay or insects between inspections. In contrast, poles deemed insufficient to continue supporting the overhead infrastructure are designated for replacement.
- *Underground Residential Distribution (URD) equipment inspections* – I&M inspects the above ground equipment of the URD system (e.g., pedestals, padmount transformers, and primary risers) to identify potential safety risks and equipment indicating a need of repair or replacement. These systematic inspections are scheduled to physically inspect all of these facilities over a five year period.
- *Overhead line inspections* – I&M inspects overhead facilities and equipment to identify potentially hazardous conditions due to deteriorated or damaged equipment. These situations are resolved immediately, if determined to be necessary, or are scheduled for repair/replacement if the circumstance allows. These systematic inspections are scheduled to physically inspect all of these facilities over a five year period.
- *Contact voltage inspections* – I&M inspects downtown underground network areas to detect possible stray voltage on any metallic

equipment or structure in close proximity to network facilities to ensure public safety. As with other inspections, issues are resolved in a timely manner depending on the test results. Contact voltage inspections are performed across the four underground network systems on an annual cycle.

Q42. What are the drivers and benefits of the Company's risk mitigation programs?

As mentioned earlier, the risk mitigation programs are intended to identify and remediate assets that may pose a potential reliability and/or safety risk to the public or employees.

Q43. What are the work scopes and timing of the Company's planned risk mitigation programs?

Figure DSI-9 provides a description, number of units, and the estimated costs the risk mitigation program work plan and costs for 2021-2022.

Figure DSI-9. Risk Mitigation Programs (Indiana - O&M - $000)

Inspection Program	Projected Units	Description	2021	2022
Wood pole inspection	30,660	Comprehensive pole inspection and treatment (poles)	$680	$700
URD Equipment Inspection	13,460	Inspect above ground structures (padmounts, enclosures, pedestals)	$111	$114
URD Locates	175,780	Locate underground facilities (locations assigned)	$3,164	$3,259
Overhead Line Inspection	2,430	Inspect overhead distribution lines (miles)	$258	$266
Contact Voltage Inspection	4	Inspect downtown business district network areas (cities)	$53	$55
Total			**$3,926**	**$4,394**

E. Grid Modernization Category

Q44. Please summarize I&M's Grid Modernization projects reflected in the Capital Forecast Period and Test Year operating costs.

I&M's Grid Modernization projects are designed to leverage technology for the purpose of improving system resiliency and functionality. In addition to allowing I&M to respond quicker once an event occurs, some of these technologies enhance how the Company can detect potential safety risks.

The grid modernization projects that are planned for the Capital Forecast Period and Test Year 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 2021.
- *Enhanced CVR* - I&M's Enhanced CVR projects are designed to utilize technology to adjust the voltage and reactive power profile on a distribution circuit. With the addition of AMI meters, CVR at I&M will operate more effectively with data and information taken directly from the end of line meter voltage readings located at the point of service delivery to the customer. I describe this in Section part VI of my testimony as does Company witness Walter.
- *Distribution Automation Circuit Reconfiguration (DACR)* – DACR consists of creating smart circuit ties coupled with technology that isolate an outage condition and automatically reconfigure the power supply to minimize the duration customers are affected. I&M will subsequently dispatch its personnel to the affected area to resolve the issues that caused the initial event.

- *Supervisory Control and Data Acquisition (SCADA)* – SCADA systems include hardware and software components installed at distribution substations. This system provides remote "visibility" into a station and is set to provide real-time information on various hardware components, power flows, loading conditions and circuit level outage events.
- *Distribution Line Sensors* – These devices are attached to overhead distribution lines and continuously monitor parameters of the lines in real time (e.g., current, voltage, fault currents). 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, conduct real-time loading of the circuit portions downstream from the sensor, and monitor and analyze interferences affecting power quality. The data collected from distribution line sensors will also help improve the engineering and design efforts over time by providing more information on system characteristics.
- *Smart Reclosers* – Smart reclosers are standard recloser units equipped with communication and control technology that allows for remote monitoring and operation of these devices.
- *Smart Circuit Ties* – I&M's smart circuit tie program upgrades circuits by incorporating smart reclosers and line sensors in areas that could be used to reconfigure circuits following an outage event. This will allow the Distribution Dispatch Center (DDC) to remotely evaluate the loading configuration of circuits prior to restoring service without having to wait on a field resource to take measurements or reconfigure connections between circuits.

Q45. What are the benefits of I&M's Grid Modernization projects?

The majority of I&M's Grid Modernization projects improve resiliency of the system by providing real time information of event occurrences, allowing I&M to provide a more rapid response. Additionally, these projects enhance grid safety and operation through early detection of potential component failures. This technology will better positon the system to incorporate emerging technologies pertaining to energy storage and microgrids if/when they become effective options to further enhance the flexibility and reliability of the system.

Q46. What are the work plans and expected costs of I&M's Grid Modernization projects during the Capital Forecast Period?

The Grid Modernization work plan is shown in *Figure DSI-10*. Capital expenditures for the Capital forecast related to the Company's distribution grid modernization projects are shown in *Figure DSI-11*. Attachment DSI-4 contains additional details including descriptions of Grid Modernization projects by type of project, circuit, estimated labor and material costs, and maps of locations of the projects.

Figure DSI-10. Summary of Grid Modernization Work Plan (Indiana)

Grid Modernization	Units	Driver	2021	2022
AMI	Meters	Customer Experience, Reliability	148,235	106,035
Distribution Line Sensors	Units	Reliability	100	132
Distribution Automation	Circuits	Reliability	29	23
Station SCADA	Station	Reliability	3	6
Smart Reclosers	Units	Reliability	80	59
Smart Circuit Ties	Line Miles	Reliability	22.5	14.8
CVR	Circuits	System Optimization	14	76

Figure DSI-11. Grid Modernization Project Capital Expenditures ($000 - Indiana – Excluding AFUDC)

Grid Modernization	2021	2022
AMI	$35,071	$19,578
Distribution Line Sensors	$313	$424
Distribution Automation	$4,575	$3,798
Station SCADA	$3,508	$7,634
Smart Reclosers	$4,755	$3,601
Smart Circuit Ties	$7,543	$5,108
CVR	$2,644	$22,467
Totals	$58,407	$62,610

VI. AMI Deployment

Q47. What are I&M's plans to implement AMI in Indiana?

I&M is deploying AMI across its Indiana service territory over a four-year period beginning in 2021 and concluding in 2024. I also address the cost of installing the meters and communication network, the four-year deployment period, and the operational benefits AMI will provide for the distribution system.

Q48. Do other I&M witnesses support I&M's AMI deployment plan?

Yes. Company witness Thomas discusses the Company's decision to deploy AMI at this time. Company witness Bech presents the Cost-Benefit Analysis (CBA) that was prepared by Accenture. Company witness Lucas supports the customer engagement and education plan. Company witness Seger-Lawson describes I&M's requested regulatory treatment. Company witness Walter supports Demand Side Management (DSM) and customer experience programs.

Q49. What metering infrastructure is currently in use?

I&M's current metering infrastructure is predominantly an Advanced Meter Reading (AMR) Standard Consumption Meter (SCM) metering system.

Q50. What advantages does AMI offer over AMR?

AMI provides significant improvements in customer service by offering I&M the ability to monitor the overall health of the distribution system via two-way technology integral to these AMI meters. Compared to current AMR meter technology, AMI provides unprecedented operational benefits, including performing remote reading, remote activation, load monitoring, and improving service quality evaluation. AMI will also enable sharing energy usage information with customers, enhance worker safety, and reduce service costs to customers through decreased truck rolls.

Q51. What is the expected average service life of AMR meters?

The AMR communications module was installed with an expected average service life of 15 years. As a practical matter, this means that some meters will fail before 15 years while others will continue operation to or beyond the 15-year mark. Presently, over 150,000 meters within I&M's Indiana jurisdiction have been in service for 15 years or longer, representing about a third of the total AMR population in Indiana. By the end of the proposed AMI installation project (from 2021-2024), over 95% of all AMR meters will have been in service for at least 13 years.

Q52. On average, how many meters does I&M install or replace, annually?

Over the past three years (2018-2020) I&M averages over 7,000 meter replacement/installations across its Indiana service territory. Specific to meter replacements (primarily due to obsolescence or failure), these occur without notice, are scattered over the service territory, and must be addressed on an inefficient, reactive basis. Given the age of the AMR infrastructure, the failure rate of the meters is likely to increase.

Compounding this is the fact that I&M's vintage of AMR meters are no longer supported by the manufacturer, making further use of AMR imprudent. The proactive AMI deployment plan proposed by the Company provides for the prudent replacement of the AMR infrastructure, while providing all the advantages of AMI to our customers within a timely, efficient and reasonable period.

Q53. Why is AMI a necessary investment to make at this time from an operational perspective?

First, only one vendor, Itron, remains in the AMR meter business and they no longer support the SCM platform that is currently employed by the Company. Perpetuating the use of AMR would require I&M to migrate the existing operating platform over to Itron's SCM+ system, forcing the Company to invest millions of dollars into a declining technology. This situation, coupled with the factors discussed above, support the conclusion that it is prudent to replace the AMR meters with AMI technology. Likewise, rather than a patchwork of AMI deployment to replace AMR meters as they reach the end of their design lives and having to maintain two separate systems, 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 and is supported by the CBA as detailed by Company witness Bech in his testimony.

Second, I&M is focused on making investments that will lead to a better customer experience by improving operational capabilities, which I describe later in testimony, and by the customer programs available through AMI as described by Company witnesses Lucas and Walter. Basically, 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 with AMR.

Q54. Does I&M have any experience with AMI?

Yes. Presently, I&M has over 40,000 AMI meters in both Indiana and Michigan, including the initial installation of about 10,000 AMI meters in South Bend, Indiana as far back as 2008. Despite the generational differences between the meters installed in 2008 and today, there are applicable lessons learned that support the operational benefits in the present case. Additionally, as part of the American Electric Power system, I&M has gained understanding from both the corporate team supporting AMI deployments and from information shared by PSO, AEP Texas and AEP Ohio. Presently, over 60% of all meters across AEP are AMI, and by the end of 2021, over 3.5 million AMI meters will be operational within AEP's service area.

Q55. Please further explain the proposed approach to this deployment.

Due to the progressing obsolescence of AMR technology as explained above, I&M has determined that new meter installations and replacement should be AMI meters. Therefore, building out the communications backbone across I&M is planned for 2021, allowing AMI to be used for any new meters installed regardless of reason. Once the initial investment is made for the backbone and the administrative customer support systems that Company witness Lucas describes, it is prudent to begin taking advantage of these programs as quickly as is reasonably possible, which is supported by the CBA. *Figure DSI-12* provides an overview of this deployment plan, including the projected capital cost.

Figure DSI-12. AMI Deployment Plan and Capital Cost ($000 – Indiana – Excluding AFUDC)

	Infrastructure	2021	2022	2023	2024	Total
Communications Platform (Backbone)	Relays	1,745				1,745
	Access Points	78				78
	Capital Cost	$7,551				$7,551
Meter Installation	Meters	148,235	106,035	112,530	99,545	466,345
	Capital Cost	$25,116	$17,857	$19,018	$16,824	$78,817
Project Management, Design, Testing, Commissioning	Capital Cost	$2,404	$1,721	$1,828	$1,617	$7,570
Total Capital Costs		$35,071	$19,578	$20,846	$18,441	$93,938

Q56. Why has the Company chosen a four-year deployment plan?

As Company witness Bech describes in his testimony, Accenture evaluated a number of deployment options and the cost/value of each. As a result of that assessment, replacing meters randomly, in a reactionary manner, as they either failed or had to be replaced, was determined to be the least efficient and most expensive. The most aggressive approach, over a two-year period, allowed for the best cost/benefit ratio, but risked unexpected challenges with transitioning such a large number of customers over to AMI so quickly. Therefore, I&M decided that a four-year schedule was optimal since it provided a reasonable migration to AMI, and was favorably supported by the CBA.

Q57. What are the benefits of AMI from an operational perspective?

Based on I&M's experience and the broader, shared experiences of other AEP companies, deploying AMI provides numerous operational benefits that will allow I&M to improve its service all of its customers. These operational benefits include:

- *Improved Reliability* – AMI integrates with service restoration systems to more accurately detect power outage locations. With AMI, customers are no longer required to first call I&M and inform us of a power interruption. Similarly, since each meter that experiences a particular outage event "signals" I&M individually, a more accurate understanding of where the outage occurred is possible. This allows crews to be dispatched more precisely, thereby reducing the outage duration.

- *Improved Public Safety* – AMI enhances public safety by providing mechanisms to proactively detect and, if warranted, de-energize portions of the grid from the dispatch center. Having this "visibility" into the system provides real-time information that helps minimize risk and safety hazards by enabling early detection of issues such as a hot meter socket or a broken neutral wire.
- *Improved 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 potentially hazardous situations on customers' premises. Additionally, since AMI can detect and "communicate" conditions such as hot socket, personnel can be alerted to this condition without discovering it inadvertently reducing potential safety risk.
- *Mitigate Tampering and Theft* – AMI meters allow I&M to detect meters that have been tampered with or removed at the time such activity occurs. Additionally, because each AMI meter has a unique identifier, stolen meters can be effectively located if reinstalled in a different location. Tampering, removing and installing meters by untrained people can pose serious risk of injury to those involved and anything that can be done to discourage this activity is beneficial.
- *Improved 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. With AMI meters, I&M can detect many types of reading errors quickly, so that the problem

can be addressed in a timely manner. This, in turn, reduces lost revenue and the need to estimate bills due to meter errors.

- *Remote Reconnection* – When accounts are activated for the first time or reactivated, AMI technology will allow I&M to restore service more quickly once payment is received. Through AMI, reconnection can be expedited from the office without having to schedule a site visit to the customer's premises. Similarly, the time of day that this activity can be performed is expanded beyond the traditional workday. Efficiencies gained by this remote capability are quantified and supported by Company witness Bech.

- *Real-time loading and voltage level monitoring* – Presently, if a load or voltage reading is necessary, a trip to that customer's premises is required. This presents logistical and timing challenges with the anticipated market changes that may be coming such as increases in Distributed Energy Resources (DERs) and Electric Vehicle (EV) loads. Real-time voltage monitoring, at each customer's location, also supports an expansion of Conservation Voltage Reduction technology on I&M's system. How this relates to AMI and subsequent deployment plans are outlined in the next section of my testimony and supported by Company witnesses Walter and Bech.

Q58. Given that I&M is transitioning from an AMR to an AMI system, some of the operational savings have been realized over the years that AMR has existed. Will there be additional, quantifiable efficiency savings realized with the implementation of AMI?

Yes. By the conclusion of the initial AMI deployment plan in 2024, I&M has projected a net O&M operational savings of $2.9 million dollars (net of "avoided O&M operational expenses" and "run-the-business O&M expenses"), which will continue to have a cumulative effect in the years to come. Details and quantifiable savings are provided by Company witness Bech as part of the CBA.

Q59. What are the expected costs of I&M's AMI deployment plan?

Figure DSI-12 shows projected capital 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. Additionally, ongoing operational expenses are itemized by Company witness Bech

Q60. Are the costs for the AMI deployment plan included in the Cost-Benefit Analysis conducted by Accenture for the AMI project?

Yes. The Company worked closely with Accenture to estimate both the costs and expected benefits for all of the AMI deployment plan and have incorporated both into the Cost Benefit Analysis study as presented by Company witness Bech. The costs estimates are based on I&M's experience in installing over 40,000 AMI meters coupled with the experience gained collectively across American Electric Power (AEP).

VII. Enhanced CVR Deployment

Q61. What is Enhanced CVR and what benefits does it offer I&M customers?

As described by Company witness Walter, Enhanced CVR is a grid modernization technology that allows the voltage on specific circuits to be reduced, thereby optimizing the efficiency of the delivery voltage. When taken collectively, across a number of circuits, it can provide a cumulative amount of capacity savings, resulting in a reduced cost of service to our customers.

Q62. Does the Company currently have CVR technology?

Yes. Prior to 2021, I&M has installed and operated CVR on 68 circuits in both Indiana and Michigan. With the planned deployment of AMI, these existing CVR circuits will be transitioned to Enhanced CVR.

Q63. How does CVR relate to AMI?

As mentioned earlier, AMI offers the Company the ability to actively monitor, in real-time, the service delivery voltage to the customers' premises. Under the current CVR in place, absent AMI, the Company has to take a more conservative approach to how much voltage reduction it can take at the point of distribution (from the station site) to ensure no customer's voltage drops below the required levels. Company witness Walter provides more detail on this aspect. Additionally, with the ability to more accurately drop voltage lower, additional circuits can be included in Enhanced CVR than were previously scheduled. The value of these voltage reductions and the projected savings to customers are included in the Accenture CBA and described by Company witnesses Walter and Bech.

Q64. What are the expected costs of I&M's Enhanced CVR deployment plan?

Attachment DSI-5 provides the installation costs for the projected Indiana Enhanced CVR projects in 2021 and 2022.

Q65. What is the basis of the cost estimates provided?

Presently, I&M has 65 circuits in Indiana equipped with CVR technology, providing both the experience with installing and operating these systems as well as confidence in the cost estimates provided. These costs (included in Attachment DSI-5), are based on parametric analysis leveraging pertinent cost information from historical work performed as well as engineering expertise and experience as it relates to current construction and design standards.

VIII. Distribution Capital Expenditures

Q66. What capital expenditures are you supporting in this proceeding?

I am supporting distribution capital expenditures during the Capital Forecast Period from January 1, 2021 through December 31, 2022. This twenty-four-month period commences after the conclusion of the historical base period and continues through the end of the Test Year. These amounts are provided on a Total Company basis, unless otherwise indicated, with Company witness Duncan supporting the jurisdictional allocation of costs.

Q67. How is the total amount of capital expenditures to be made in I&M's distribution system determined?

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, reliable and resilient electric 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.

Q68. Please describe the major categories of distribution investments.

Figure DSI-13 shows total Company distribution capital expenditures during the Capital Forecast Period excluding Allowance for Funds Used During Construction (AFUDC):

Figure DSI-13. Distribution Capital Expenditures ($000 – Total Company – Excluding AFUDC)

Category	2021	2022	Total
Vegetation Management	$9,249	$3,604	$12,853
Asset Renewal and Reliability	$45,120	$49,576	$94,696
Combined Projects	$70,303	$51,561	$121,864
Grid Modernization	$81,752	$96,147	$177,899
Customer Service, City and State Requirements, and Other	$54,327	$66,239	$120,566
Totals	$260,751	$267,127	$527,878

Capital expenditures related to vegetation management, asset renewal and reliability, combined projects, and grid modernization are described in connection with the Distribution Management Plan. Capital expenditures for Customer Service, City and State Requirements, and Other relate to the installation of service to new customers, and the relocation of distribution facilities to accommodate projects (such as road construction) and the capital required for service restoration.

Q69. What amount of distribution capital investment will be placed in service during the Capital Forecast Period?

Figure DSI-14 shows the amount of distribution capital investment (including AFUDC) that will be placed in service during the Capital Forecast Period.

Figure DSI-14. Distribution Additions to Electric Plant In Service (Total Company - Including AFUDC)

Category	2021-2022 Additions to EPIS
Vegetation Management	$21,254,707
Asset Renewal and Reliability	$101,182,449
Combined Projects	$164,844,739
Grid Modernization	$176,752,993
Customer Service, City and State Requirements, and Other	$123,683,880
Total	$587,718,768

Q70. Are the Company's projected distribution capital expenditures during the Capital Forecast Period representative of the investments necessary to provide safe, reliable and resilient service?

Yes.

IX. Distribution Operations & Maintenance Expense

Q71. What O&M expenses are you supporting in this proceeding?

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

Q72. What are the historical base period and forward-looking Test Year levels of distribution O&M that you are supporting in this filing?

I am supporting historical base period (calendar year 2020) distribution O&M expense of $74.7 million and Test Year O&M expense of $77.9 million. I present O&M figures on a Total Company basis, unless otherwise indicated, while Company witness Duncan supports the Indiana jurisdictional allocation in this proceeding.

Q73. What are the major areas of distribution O&M expense?

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. It also includes 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 providing adequate vegetation control 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 specific to I&M's Indiana jurisdiction.

Q74. Please provide the historical base period and forward-looking Test Year distribution O&M expense by category.

Figure DSI-15 provides the historical base period and Test Year distribution O&M expense by category. What is notable is the declining amount of forecasted expenses specific to Ongoing O&M, which indicates good controls in the midst of increasing operational costs due to inflation and other factors.

Figure DSI-15. Distribution O&M Expenses (Total Company, $000)

Distribution O&M Category	Historical Base (2020)	Test Year (2022)
Ongoing O&M	$43,673	$42,920
Vegetation Management	$26,737	$29,197
Major Storms	$4,291	$5,775
Total	$74,701	$77,892

As described above in testimony, expenditures during 2020 were notably impacted by COVID-19 and off-system mutual assistance support, reducing crews and the ability to complete all the intended work. This is being remedied in 2021.

Q75. Please explain the Major Storm O&M category.

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.

Q76. What have I&M's Major Storm expenses been from 2010-2020?

As shown in *Figure DSI-16*, I&M's annual major storm costs in Indiana have been as high as $5.8 million in the last five years and $8.5 million in the last ten years. Conversely, there have been years as low as $1.2 million. Bottom line, storm costs have fluctuated based on the nature of these unpredictable events that can vary in size and scope, causing Major Storm expenses to be volatile from one year to the next.

Figure DSI-16. Major Storm Expense

Year	Major Storm Costs
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
2019	$3,825
2020	$5,789

As discussed by Company witness Seger-Lawson I&M has adjusted the amount of Major Storm expense in the Test Year to reflect the Company's 2016-2020 five-year average of $2.8 million (Indiana jurisdiction).

Q77. What benefits does the Major Storm Reserve convey to I&M's customers?

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.

Q78. 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?

Yes.

Q79. Does this conclude your pre-filed verified direct testimony?

Yes.

VERIFICATION

I, David S. Isaacson, V.P. of Distribution at Indiana Michigan Power Company, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 6/28/2021

David S. Isaacson

Indiana Michigan Power - Indiana Vegetation Management Plan

Note that estimates are Class 3 estimates

Distribution Vegetation Management - 2021				
Map Reference Number	Station	Circuit	Circuit Miles by Clearance Zone Widening / Remedial Maintenance	Total Circuit Miles
1	Aladdin	Cyclone	0 / 2.1	2.1
2	Aladdin	Merchant	0 / 0.5	0.5
3	Aladdin	Tiger	0 / 25.3	25.3
4	Aladdin	Yule	0 / 38.4	38.4
5	Anchor Hocking	Island	0 / 30.3	30.3
6	Anchor Hocking	Race	0 / 20.8	20.8
7	Beech Rd	Dunn	13.5 / 0	13.5
8	Beech Rd	Mckinley	0 / 0.1	0.1
9	Berne	Harrison	0 / 6.6	6.6
10	Berne	Parr	0 / 33.2	33.2
11	Berne	Swiss	0 / 23.5	23.5
12	Blaine Street	Grant Street	6.6 / 1.2	7.8
13	Bluff Point	Ridgeville	22.5 / 6	28.5
14	Bosman	Eaton	0 / 56.1	56.1
15	Capital Ave	Currant	0 / 16	16
16	Capital Ave	Penn	0 / 18.7	18.7
17	Clipper	Cedar	0 / 22.1	22.1
18	Colfax	2	0 / 2.3	2.3
19	Colfax	3	4.8 / 0	4.8
20	Colony Bay	Medical Park	0 / 2.6	2.6
21	Conant	1-Nibco	0 / 7.8	7.8
22	Concord	No 1	8.2 / 0	8.2
23	Concord	No 4	0 / 9.5	9.5
24	Countryside	Homestead	16.8 / 0	16.8
25	County Line	Tonkel	0 / 25.6	25.6
26	Countyrd4	Garver Lake	11.3 / 0	11.3
27	Darden Road	Douglas	0 / 18.4	18.4
28	Darden Road	East	0 / 14.5	14.5
29	Darden Road	North	0 / 21.8	21.8
30	Diebold Rd	Pleasant Valley	0.95 / 0	0.95
31	Drewrys	Diamond (South)	7.6 / 0	7.6
32	Elkharthy	No 2	7.9 / 0	7.9
33	Ellison Rd.	Aboite #2	0 / 5	5
34	Elmridge	Hines Road	0 / 16.8	16.8
35	Ferguson	Airport Drive	0 / 3.2	3.2
36	Fulton	Bloomingdale	0 / 13.9	13.9
37	Furguson	Brookwood	0 / 7.1	7.1
38	Gaston	Gaston	0 / 35.1	35.1
39	Glenbrook	Fernhill	0 / 4.2	4.2
40	Grabill	Page	0 / 52.4	52.4
41	Granger	1	0 / 10	10
42	Gravelpit	1 (Granite)	10.2 / 0	10.2
43	Gravelpit	3 (Slate)	0 / 23.2	23.2
44	Hacienda	Goeglein	0 / 15.5	15.5
45	Hadley	Flaugh	0 / 31.8	31.8
46	Harlan	Thimler	0 / 81.7	81.7

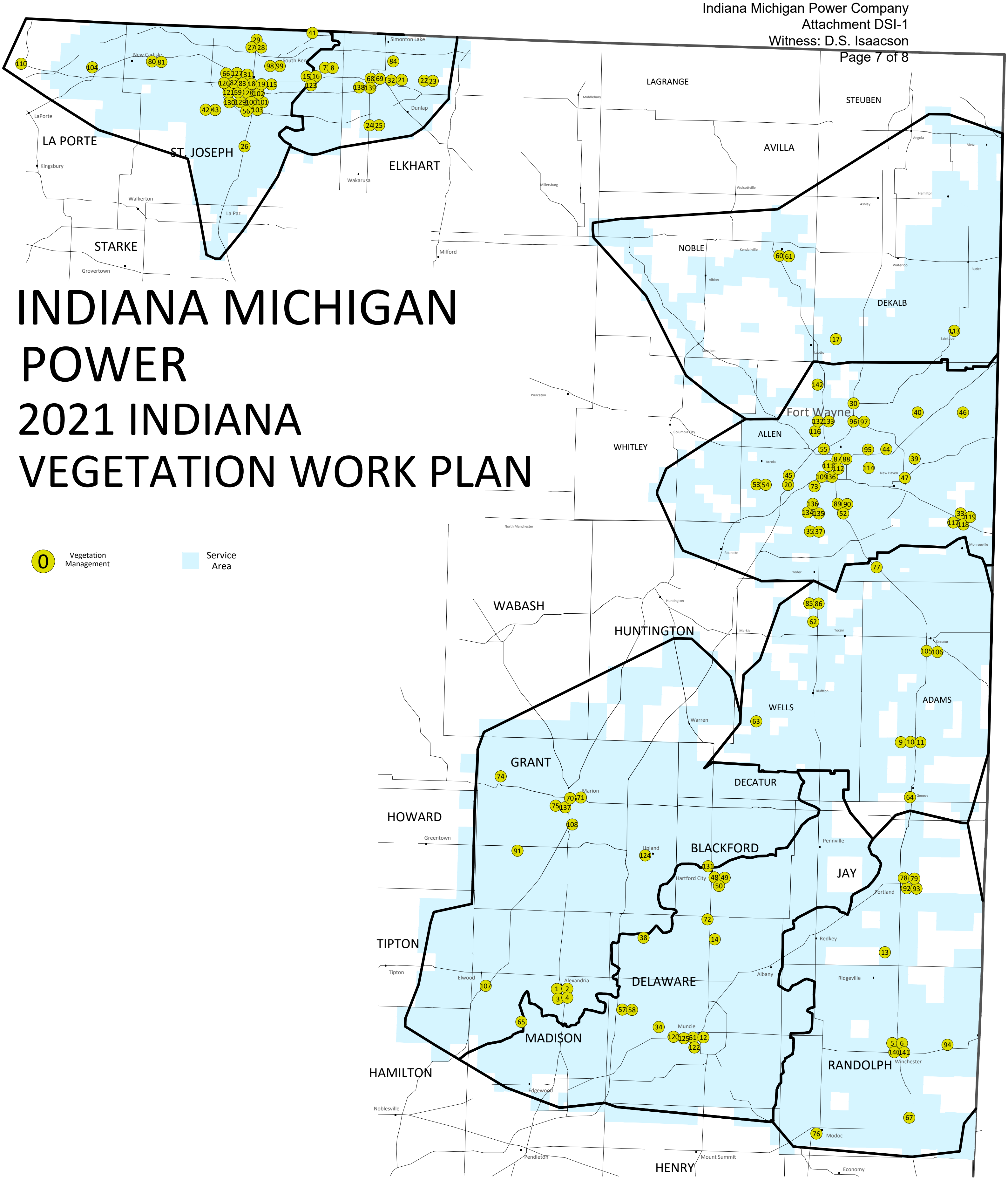
47	Harper	Minich	0 / 30.7	30.7
48	Hartford City	Central	21.8 / 1.7	23.5
49	Hartford City	North	0 / 47	47
50	Hartford City	South	21.3 / 6.7	28
51	Haymond	Jefferson	0 / 19	19
52	Hillcrest	Southtown #2	0 / 16.7	16.7
53	Illinois Rd	Chestnut	18.1 / 0	18.1
54	Illinois Rd	Covington	0 / 5.54	5.54
55	Industrial Park	Progress	0 / 2.9	2.9
56	Jacksonro	3S Main St	0 / 14.6	14.6
57	Jones Creek	Green	1.5 / 0	1.5
58	Jones Creek	Industrial Park	16.1 / 0	16.1
59	Kankakee	2W. Olive	24.1 / 0	24.1
60	Kendallville	Krueger	4.7 / 3.2	7.9
61	Kendallville	Park	0 / 11.3	11.3
62	Kingsland	Tocsin	0 / 18.7	18.7
63	Liberty Center	Barber Mill	0 / 25.8	25.8
64	Limberlost	Tomato	25 / 0	25
65	Linwood	Frankton	13.5 / 9.5	23
66	Lusherave	No 2	21.7 / 0	21.7
67	Lynn	Lynn	0 / 42.3	42.3
68	Mackey	General	0 / 7.1	7.1
69	Mackey	Miles	11.3 / 0	11.3
70	Marion Plant	North	0 / 16.3	16.3
71	Marion Plant	South	0 / 4.2	4.2
72	Mayfield	Selma	28.6 / 0	28.6
73	Mckinley	Connett	0 / 6.5	6.5
74	Mier	Swayzee	40 / 0	40
75	Miller Avenue	South	5.6 / 0	5.6
76	Modoc	Modoc	26.8 / 32	58.8
77	Muldoon Mill	Hoagland	0 / 60.01	60.01
78	North Portland	Forge	0 / 1.1	1.1
79	North Portland	West	5.6 / 0	5.6
80	Olive	Edison	0 / 10.3	10.3
81	Olive	Industrial	0 / 15.8	15.8
82	Oliver Plow	Bissel	0.5 / 0	0.5
83	Oliver Plow	James	0.1 / 0	0.1
84	Osolo	No 2	6.9 / 0	6.9
85	Ossian	Lefever	0 / 2.3	2.3
86	Ossian	Mill	0 / 15.6	15.6
87	Parnell	Coliseum	0 / 2.5	2.5
88	Parnell	University	0 / 4.9	4.9
89	Pettit	Sears	0 / 14.1	14.1
90	Pettit	Vernon	0 / 8.9	8.9
91	Pipe Creek	Crusher	1.6 / 0	1.6
92	Portland	East	0 / 31.2	31.2
93	Portland	Sheller	15.9 / 0	15.9
94	Price	Harrisville	0.1 / 0	0.1
95	Reed	Brookside	0 / 13.6	13.6
96	Robinson Park	Mayhew	0 / 5.7	5.7
97	Robison Park	Mallard	0 / 10.5	10.5
98	S.Bend	1N.	0 / 14.6	14.6

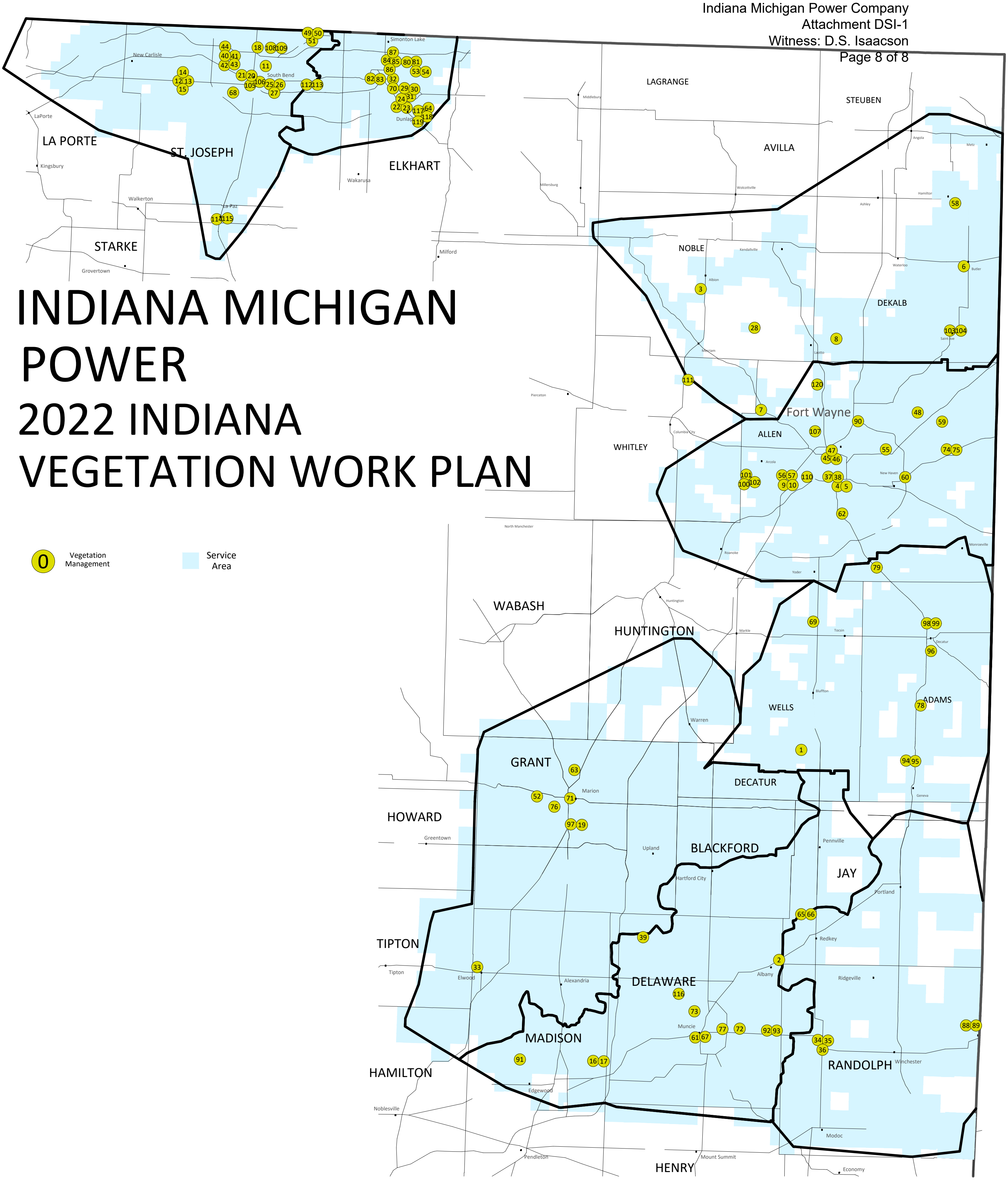
99	S.Bend	3E.	0 / 11.9	11.9
100	S.Side	1S. (Eagle)	0 / 1.7	1.7
101	S.Side	2E. (Wildcat)	0 / 13.6	13.6
102	S.Side	3N. (Broadway)	6.3 / 0	6.3
103	S.Side	4W. (Main St)	0 / 2.7	2.7
104	Silver Lake	Rolling Prarie	0 / 49.9	49.9
105	South Decatur	Patterson	0 / 7	7
106	South Decatur	West	0 / 17.6	17.6
107	South Elwood	Country Club	0 / 85.8	85.8
108	South Side	North	0 / 14.9	14.9
109	Spring	Tower	0 / 9.5	9.5
110	Springville	New Buffalo (80.4)	0 / 33.7	33.7
111	Spy Run	Crescent	0 / 5.1	5.1
112	Spy Run	Three Rivers	0 / 10.4	10.4
113	St Joe	Newville	0 / 24.8	24.8
114	State Street	Brentwood	0 / 13.8	13.8
115	Studebaker	Roadster	4.4 / 0	4.4
116	Summit	Chalfant	0 / 12.2	12.2
117	Tillman	Paulding/Put Remc	0 / 0.1	0.1
118	Tillman	Townley	0 / 45.4	45.4
119	Tillman	Zulu	0 / 25.5	25.5
120	Tillotson Avenue	Jackson	0 / 14.6	14.6
121	Torringto	2Roachapp	0 / 0.2	0.2
122	Twenty-First Street	Cowan	0 / 48.9	48.9
123	Twin Branch	No 2	7 / 0	7
124	Upland	North	26.3 / 3	29.3
125	Utica	Nichols	0 / 2.5	2.5
126	W.Side	W Side - 1N.	5.2 / 5.2	10.4
127	W.Side	W Side - 2W.	0 / 17.7	17.7
128	W.Side	W Side - 4	0 / 8.6	8.6
129	W.Side	W Side - 5	4 / 9.6	13.6
130	W.Side	W Side - 6	11.3 / 0	11.3
131	Wabash Ave.	South	0 / 71	71.0
132	Wallen	Fritz	9.2 / 0	9.2
133	Wallen	Windsor	0 / 6.7	6.7
134	Waynedale	Ideal	0 / 3.3	3.3
135	Waynedale	Ridge	0 / 5.9	5.9
136	Waynedale	Smith	2.4 / 0	2.4
137	West End	East	3.2 / 0.8	4.0
138	Whitaker	No 2 (Elk)	17.1 / 0	17.1
139	Whitaker	Rail (2)	0 / 0.3	0.3
140	Winchester	Overmyer	0 / 0.8	0.8
141	Winchester	Saratoga	0 / 57.1	57.1
142	Woods Road	North	25.3 / 0	25.3
		Total	543 / 1878	2,421
		Estimated O&M	$16,240,000	
		Estimated Capital	$9,249,381	

Distribution Vegetation Management - 2022				
Map Reference Number	**Station**	**Circuit**	**Remedial Maintenance**	**Total Circuit Miles**
1	Adams	Vera Cruz	66.0	66.0
2	Albany	Albany	47.1	47.1
3	Albion	City	17.2	17.2
4	Anthony	Tokheim	5.8	5.8
5	Anthony	Wallace	7.6	7.6
6	Butler	Rural	62.5	62.5
7	Carroll	Carroll	19.3	19.3
8	Clipper	Garrett	19.1	19.1
9	Colony Bay	Dicke	14.4	14.4
10	Colony Bay	Getz	11.2	11.2
11	Conant	No 3	15.2	15.2
12	Concord	No 2	9.1	9.1
13	Concord	No 3	4.4	4.4
14	Concord	No 5	6.6	6.6
15	Concord	No 6	9.3	9.3
16	Cross Street	Chesterfield	16.0	16.0
17	Cross Street	West	13.7	13.7
18	Darden Road	Stateline	1.8	1.8
19	Deer Creek	East	36.8	36.8
20	Drewrys	Brookfield	11.4	11.4
21	Drewrys	Portage	8.7	8.7
22	Dunlap	2Con-Mall	6.9	6.9
23	Dunlap	No 3	9.2	9.2
24	Dunlap	Rivermano	21.1	21.1
25	E.Side	1E. (Park Jeff)	4.4	4.4
26	E.Side	4N. (Wilson)	16.4	16.4
27	E.Side	5S.E. (Hastings)	12.2	12.2
28	Ege	#1 Remc	0.1	0.1
29	Elcona	Country Club	28.6	28.6
30	Elcona	No 1	3.0	3.0
31	Elcona	No 2	2.0	2.0
32	Elkharthy	No 1	10.2	10.2
33	Elwood	Leisure	134.1	134.1
34	Farmland	Bears	75.9	75.9
35	Farmland	Plum	19.7	19.7
36	Farmland	Wildcat	14.2	14.2
37	Fulton	Broadway	1.0	1.0
38	Fulton	Edsall	2.5	2.5
39	Gaston	Matthews	66.4	66.4
40	German	No1S. (Berlin)	5.0	5.0
41	German	No3 (Audi)	3.2	3.2
42	German	No4 (Bmw)	3.6	3.6
43	German	No5 (Porsche)	8.9	8.9
44	German	No6 (Munich)	3.6	3.6
45	Glenbrook	No 1	0.1	0.1
46	Glenbrook	No 2	0.1	0.1
47	Glenbrook	Speedway	4.9	4.9
48	Grabill	Sheller	9.3	9.3

49	Granger	4	10.2	10.2
50	Granger	6	3.6	3.6
51	Granger	3 Amoco	1.2	1.2
52	Grant	South	27.5	27.5
53	Greenleaf	North	4.8	4.8
54	Greenleaf	South	4.0	4.0
55	Hacienda	Maplewood	10.3	10.3
56	Hadley	Arcola	4.4	4.4
57	Hadley	Blake	5.6	5.6
58	Hamilton	Hamilton	89.3	89.3
59	Harlan	Notestine	58.3	58.3
60	Harper	Tanglewood	16.6	16.6
61	Haymond	Riverside	11.2	11.2
62	Hillcrest	Dunbar	13.8	13.8
63	Hummel Creek	South	54.1	54.1
64	Ireland Road	3W	40.0	40.0
65	Jay	Millgrove	94.8	94.8
66	Jay	Redkey	58.3	58.3
67	Jobes	East Commerial	1.3	1.3
68	Kankakee	Prairie	4.7	4.7
69	Kingsland	Uniondale	14.3	14.3
70	Lusherave	Wolf Ave	13.1	13.1
71	Marion Plant	Hospital	7.6	7.6
72	Mayfield	Waterworks	30.0	30.0
73	Mcgalliard	Morningside	14.5	14.5
74	Milan	Bull Rapids	46.4	46.4
75	Milan	Warrior	51.3	51.3
76	Miller Avenue	North	4.5	4.5
77	Mock Avenue	Frank Foundries	1.2	1.2
78	Monroe	Monroe	55.7	55.7
79	Muldoon Mill	Maples	17.6	17.6
80	Northland	No 1	5.9	5.9
81	Northland	No 2	10.0	10.0
82	Northwest	No 4 (Mackey Music)	4.8	4.8
83	Northwest	No 5 (Mackey Charger)	5.1	5.1
84	Osolo	No 1	7.8	7.8
85	Osolo	No 3	16.7	16.7
86	Osolo	No 5	9.0	9.0
87	Osolo	No 6	13.7	13.7
88	Randolph	Chestnut	59.6	59.6
89	Randolph	Industrial	1.2	1.2
90	Robison Park	Concordia	8.7	8.7
91	Rosehill	Rosehill	54.1	54.1
92	Selma Parker	Parker	63.3	63.3
93	Selma Parker	Wapahani	72.2	72.2
94	South Berne	Jay Co Remc	0.1	0.1
95	South Berne	Yager	7.2	7.2
96	South Decatur	Tyndall	9.6	9.6
97	South Side	Commercial	9.2	9.2
98	Soya	Number 1	0.1	0.1
99	Soya	Number 2	0.1	0.1
100	Spring	Leesburg	5.1	5.1

101	Spring	Tyler	5.0	5.0
102	Spring	Viola	0.7	0.7
103	St Joe	East	49.1	49.1
104	St Joe	West	98.5	98.5
105	Studebaker	Hawk	8.0	8.0
106	Studebaker	Lark	4.7	4.7
107	Summit	Huguenard	20.6	20.6
108	Swanson	1S.	26.0	26.0
109	Swanson	3E.	5.9	5.9
110	Thomas Road	Apple Glen	7.5	7.5
111	Tri-Lakes	Shriner	22.0	22.0
112	Twin Branch	No 1	53.0	53.0
113	Twin Branch	No 3	27.5	27.5
114	Vintage	Lapaz	16.0	16.0
115	Vintage	Plymouth	14.3	14.3
116	Wes Del	Farmington	11.5	11.5
117	Whitaker	Baugo (1 & 3)	13.1	13.1
118	Whitaker	Dragway (1)	24.1	24.1
119	Whitaker	Moose (1)	10.7	10.7
120	Woods Road	South	6.6	6.6
			Total	2,428
		Estimated O&M	$16,022,000	
		Estimated Capital	$3,603,618	


INDIANA MICHIGAN
POWER
2021 INDIANA
VEGETATION WORK PLAN
0 Vegetation Management
Service Area
LA PORTE
ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
STARKE
NOBLE
DEKALB
AVILLA
WHITLEY
ALLEN
Fort Wayne
WABASH
HUNTINGTON
WELLS
ADAMS
GRANT
HOWARD
DECATUR
BLACKFORD
JAY
TIPTON
DELAWARE
MADISON
HAMILTON
RANDOLPH
HENRY


INDIANA MICHIGAN POWER
2022 INDIANA VEGETATION WORK PLAN
Vegetation Management
Service Area
LA PORTE
ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
AVILLA
STARKE
NOBLE
DEKALB
WHITLEY
ALLEN
Fort Wayne
WABASH
HUNTINGTON
WELLS
ADAMS
GRANT
DECATUR
HOWARD
BLACKFORD
JAY
TIPTON
DELAWARE
MADISON
HAMILTON
RANDOLPH
HENRY

Indiana Michigan Power - Indiana Asset Renewal Management Plan

Note that estimates are Class 3 estimates

Single Phase Line Rebuild 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Churubusco	Blue Lake	Replace 2-4CU with 2-#2AA from WH164-102 to WH164-88	0.89
2	Grabill	Page	Replace 2-4AS with 2-#2AA from AL196-270 to AL168-18	0.69
3	Magley	Preble	Replace 2-#6CU with 2-#2AA from AD196-38 to AD197-263	0.90
4	Magley	Preble	Replace 2-#4CU with 2-#2AA from AD180-78 to AD195-58	0.95
5	Milan	Bull Rapids	Replace 2-6CU with 2-#2AA from AL404-225 to AL435-19	1.98
6	Beech Road	Dunn	Reconductor 2-4AS to 2-2AA from EL206-222 to EL206-152 and EL206-226 to EL206-140	0.57
7	Whitaker	Elk	Reconductor 2-4AS to 2-2AA from EL0208000231 to EL0208000306	0.44
8	Pine	South	Reconductor 2-4CU to 2-2AA from JO0204000030 to JO0204000206 & JO0204000198	1.75
9	German	Hamburg	Reconductor 2-4 CU with 2-2AA from JO0186000010 to JO0186000102	0.90
10	Whitaker	Dragway	Reconductor 2-4 CU with 2-#2AA from JO0268000194 to JO0244000155, JO0244000265, JO0244000201 & JO0244000295	1.02
11	Mackey	Cap	Reconductor 2-4AS with 2-2AA from EL0168000076 to EL0168000281, EL0168000264	0.55
12	County Road 4	Simonton Lake	Reconductor 2-4 AS with 2-#2AA from EL0126000002 to EL0126000303	0.20
13	New Carlisle	Hudson	Reconductor 2-4CU with 2-#2AA from LP175- 38 to LP175-239, LP175-73, LP175-66, LP175-50	1.03
14	Gravel Pit	Slate	Reconductor 2-4 AS with 2-#2AA from JO366-17 to JO388-70 & JO388-25 to JO388-67	0.64
15	Cleveland	Park Forest	Reconductor 2-4 AS with 2-#2AA from JO0123000035 to JO0123000080	0.33
16	East Side	Adams	Reconductor 4 Cu to 2AA beyond JO0260000330, E & W	0.36
17	Springville	New Buffalo	Reconductor 4 AS to 2AA from LP0168000004 to LP0169000001	1.17
18	Springville	Toll Rd	Reconductor 0.71 Miles of 4 AS with 2-#2AA from LP0232000025 to LP0211000040	0.71
19	Arnold Hogan	Cammack	Replace 2-4 CU with 2-2AA from DE0053000087-DE0053000299	0.27
20	Daleville	East	Replace 4CU & 4AS with 2-2AA from DE0103000026 - DE0104000042	1.26
21	Blaine Street	Luick Avenue	Replace 4AS & 4CU with 2-2AA from DE0087000060 - DE0088000052	1.61
22	Fairmount	Fowlerton	Replace 2-4AS with 2-2AA from GR96-133 to GR85-111	0.74
23	Jay	Millgrove	Replace existing small wire with 2-2AA from JA67D4-29 to JA67D4-56	0.45
24	Jay	Redkey	Replace 2-4 CU with 2-2AA from JA0081C20030-JA0082000008	1.17
25	Linwood	Linwood	Replace 2-4 AS with 2-2AA from MA63-52 to MA62-182	1.33
26	Mayfield	Selma	Replace 2-4 AS with 2-2AA from DE68D1-164 to DE68C2-373	0.20
27	Mayfield	Selma	Replace 2-6 CU with 2-2AA from DE68D1-165 to DE68D1-296	0.09

28	Mayfield	Waterworks	Replace 2-4 CU with 2-2AA from DE0077C40208 - DE0078000184	1.09
29	Mier	Sweetser	Replace 2-4 CU with 2-2AA from GR0025D40019 to GR0025000149	0.82
30	Peacock	Summitville	Replace 6A CC and 4AS with 2-2AA from MA13-21 to MA13-3	1.00
31	Rosehill	Rosehill	Replace 4AS and 6A CC with 2-2AA from MA0060000149 to MA0060000016	1.62
32	Rosehill	Rosehill	Replace 2-4AS with 2-2AA from MA0067000036 to MA0067000018	0.50
33	Royerton	Riggin	Replace 6A CC and 4 AS with 2-2AA from DE0047000141-DE0047000119	1.14
34	South Elwood	Country Club	Replace 2-4AS with 2-2AA from MA0033000120 - MA0022B20052	0.24
35	Van Buren	Van Buren	Replace 2-4AS with 2-2AA from GR0010000085 to GR0010000054	1.39
36	Wes Del	Harrison	Replace 4 CU and 6A CC with 2-2 AA from DE0034000005 - DE0034000057	0.70
			Total	30.7
			Estimated Labor Cost	$2,042,972
			Estimated Material Cost	$364,510
			Estimated Total Capital	$2,407,482

Single Phase Line Rebuild 2022

Map Reference Number	Station	Circuit	Description	Miles
1	Carroll	Carroll	Replace #5 CU with 2-#2AA from AL292-6 to AL322-37	1.60
2	Tri-Lakes	Shriner	Replace 6A CC with 2-#2AA from WH0123-56 to WH123-6.	1.08
3	St. Joe	West	Replace 4CU & 4AS with 2-#2AA from DK408-21 to DK426-39	2.34
4	Butler	City	Replace 2-#4CU with 2-#2AA from DK0245000001 to DK0181000027	2.57
5	Butler	City	Replace 4AS with 2-#2AA from DK244-546 to DK245-1	1.01
6	Grabill	Page	Replace 4AS with 2-#2AA from AL196-49 to AL196-16	0.23
7	Woods Road	North	Reconductor 5 CU to #2 AAAC from NO0459000077 to NO0459000011	1.33
8	Marquette	SR39	Reconductor 4 AS with 2-#2AA from LP0126000174 to LP0146000036	1.47
9	New Carlisle	Hudson	Reconductor 4 AS and 4 CU with 2-#2AA from LP0176000113 to LP0176000145	0.62
10	Dunlap	River Manor	Reconductor 4 AS and 4 CU with 2-#2AA from EL0255000070 to EL0255000153	0.81
11	Swanson	No 1	Reconductor 4 AS with 2-#2AA from JO0189000213 to JO0189000246 and JO0189000218 to JO0189000221	0.37
12	South Bend	No 3	Reconductor 4 AS with 2-#2AA from JO02130000251 to JO0237000660 and JO0237000738	0.42
13	Marquette	Toll Road	Reconductor 4 AS with 2-#2AA from LP0248000005 to LP0248000013, LP0248000015, LP0227000058	0.70
14	Beech Road	Dunn	Reconductor 4 AS and 4 CU with 2-#2AA from EL0206000048 to EL0206000222	0.40
15	Silver Lake	Cougar	Reconductor 4 AS with 2-#2AA from LP0217000030 to LP0239000084	0.60

16	South Bend	No 3	Reconductor 4 AS with 2-#2AA from JO0237000245 to JO0237000753	0.31
17	Pine	South	Reconductor 4 AS and 4 CU with 2-#2AA from JO0204000060 to JO0204000262 & JO0204000157	0.62
18	Swanson	No 1	Reconductor 4 AS with 2-#2AA from JO0189000560 to JO0189000298 and JO0189000320	0.66
19	Three Oaks	12 kV	Reconductor 4 AS with 2-#2AA from LP0113000001 to LP0112000002	1.33
20	Marquette	SR39	Reconductor 4 AS with 2-#2AA from LP0188000016 to LP0168000001	1.41
21	Darden Road	Auten Rd	Reconductor 4AA with 2-#2AA from JO0138000343 to JO0138000054	0.46
22	Darden Road	Douglas	Reconductor 4 AS with 2-#2AA from JO0189000005 to JO0188000256, JO0188000235, JO0188000207, JO0188000255	0.87
23	County Road 4	Simonton Lake	Reconductor 4 AS with 2-#2AA from EL0126000199 to EL0126000272	0.55
24	Conant	No 3	Reconductor 4 CU with 2-#2AA from EL0213000061 to EL0213000269 and EL0213000277	0.27
25	Darden Road	Auten Rd	Reconductor 4 AS with 2-#2AA from JO0137000162 to JO0137000064	0.28
26	Albany	Albany	Reconductor RA0002000092 - RA0002000057, 4AS to 2AA	1.69
27	Deer Creek	West	Reconductor GR61A1-5 to GR61A1-12, 4CU to 2AA	0.18
28	Deer Creek	West	Reconductor GR61A1-48 to GR61A1-89 GR61A1-83 to GR60C4-29, 4CU and 4A CC CC to 2AA	0.60
29	Farmland	Bears	Reconductor RA57-172 to RA57-24, 4AS to 2AA	1.05
30	Farmland	Plum Street	Reconductor RA36-98 to GR36-69, 4AS to 2AA	1.70
31	Gaston	Gaston	Reconductor BL23-245 to DE22-92, 4AS to 2AA	0.67
32	Pennville	Pennville	Reconductor JA58-8 to JA59-50, 4CU to 2AA	1.10
33	South Elwood	Country Club	Reconductor TI0070000144 - TI0069000161, 4AS to 2AA	1.66
34	Wabash Ave.	South	Reconductor BL36-54 to BL29-233, 4AS to 2AA	0.78
35	Albany	Albany	Reconductor RA0003000034 to RA0003000091, 6CU and 4AS to 2AA	1.69
			Total	33.4
			Estimated Labor Cost	$2,291,474
			Estimated Material Cost	$408,848
			Estimated Total Capital	$2,700,322

Three Phase Line Rebuild 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Hamilton	Hamilton	Replace 4AS with #2AA from ST429-8 to ST429-29	0.47
2	Tri-Lakes	Shriner	Replace 3/0 AS, 1/0 AS, & 4CU with 4-#2AA from WH0142-28 to WH123-57	1.01
3	Milan	Bull Rapids	Replace 2CU & 4CU with #2AA from AL405-8 & AL405-2	0.23
4	Waynedale	Lakewood	Replace 4CU & 6CU with #2AA from AL533-385 to AL533-18	0.40
5	Hamilton	Hamilton	Replace 4AS & 4CU with #2AA from ST430-635 to ST430-80	0.18
6	Colony Bay	Getz	Replace 4/0 AL & 1-159 AS Spacer Cable with 3-556 AL& 1-4/0 AA open wire from AL0502000118 to AL0502000129	0.64
7	North Kendallville	Village	Reconductor 4/0 CU to 556 AL from NO0241000374 to NO0241000891	0.37
8	Kingsland	Tocsin	Reconductor 5 CU & 2 ACSR to #2AAAC from WE0194000014 to WE0195000056	0.81
9	Kingsland	Tocsin	Reconductor 5 CU & 2 ACSR to #2AAAC from WE0194000014 to WE0195000057	0.70
10	Kingsland	Tocsin	Reconductor 5 CU & 2 ACSR to #2AAAC from WE0195000056 to WE0196000080	0.68
11	St. Joe	West	Reconductor 4CU to 336AL from DK430-030 to DK451-47	0.85
12	St. Joe	West	Reconductor 4CU to 336AL from DK451-47 to DK472-157	0.69
13	St. Joe	West	Reconductor 4 CU to #2 AAAC from DK0472000022 to DK0472000038	0.11
14	Magley	Preble	Reconductor with 556AL from AD0178000107 to AD0179000170	0.38
15	Lydick	Town	Reconductor 4 Cu to 556 AL from JO0252000440 to JO0276000012	0.93
16	South Bend	No 2	Reconductor 2-4 Cu & 2 - 2 AS to 4-2AA from JO0212000367 to JO0212000371	0.18
17	Jackson Road	Roosevelt Rd	Reconductor #4 Cu with 556 from JO0370000078 to JO0370000087	0.26
18	Jackson Road	Roosevelt Rd	Reconductor #4 Cu with 556 from JO0370000089 to JO0369000070	0.97
19	South Side	Broadway	Reconductor 4Cu from JO0283000758 to JO0283000875	0.25
20	South Side	Broadway	Reconductor 4Cu from JO0283000758 to JO0283000875	0.34
21	South Side	Broadway	Reconductor 4Cu from JO0283000758 to JO0283000875	0.42
22	Silver Lake	Rolling Prarie	Reconductor 4 AS to 4 - 2 AA from LP0235000111 to LP0235000065 and LP0235000038	0.67
23	Mackey	Cap	Reconductor 4 AS from EL0189000009 to EL0189000850	0.30
24	Daleville	East	DE83-142 to DE74-200, Replace 4 AS with 2AA	0.72
25	Jay	Millgrove	JA0067D30165 to JA0067D30159, Replace 4CU with 2AA	0.10
26	Linwood	Linwood	MA54D2-32 to MA54-82,Replace 4 AS with 2AA	0.14
27	Randolph	Jackson Pike	RA0044C40032 - RA0044D30001, Replace 6A CC and 4 CU with 2AA	0.16
28	Rosehill	Rosehill	MA62B2-63 to MA62B2-86, Replace 4 AS with 2AA	0.25
29	Selma Parker	Parker	RA23-75 to RA23-38, Replace 4 CU and 2 CU with 556AL	1.45

30	Hummel Creek	South	Reconductor GR0028B30148 - GR0028B30253, 4CU to 2AA	0.18
31	Hummel Creek	South	Reconductor GR0028A40094 - GR0028A40074, 4CU to 2AA	0.32
32	Utica	Meadows	Reconductor DE0066B10121 to DE0066B30063, 4CU, 3/0AS, 1/0CU, 2/0CU TO 556AL	0.77
33	Hummel Creek	South	Reconductor GR0028A40090 - GR0028A40092, 4AS TO 2AA	0.04
34	Hummel Creek	South	Reconductor GR0028A40086 - GR0028A20037, 4AS to 2AA	0.05
35	Jay	Redkey	Replace 4 CU AND 6 CU with 2AA, JA0081B30116 to JA81B30046, JA81B30043 to JA0081B30050 and JA0081B30052 to JA0081B30061	0.40
			Total	16.4
			Estimated Labor Cost	$3,483,475
			Estimated Material Cost	$905,096
			Estimated Total Capital	$4,388,571

Three Phase Line Rebuild 2022				
Map Reference Number	Station	Circuit	Description	Miles
1	Harlen	Thimler	Replace 3-4 CU & 1-101 AS with 3-556 AL & 1-4/0 AA from AL202-102 to AL175-65	0.94
2	Grabill	Page	Replace 2-4CU & 2-2 AS with 3-556 AL & 1-4/0 AAAC from AL0170000010 to AL0144000094	1.42
3	County Line	Dekalb	Replace 2AS & 4AS with #2AA from DK444-68 to DK423-133	1.65
4	Liberty Center	Poneto	Replace 2-6CU & 2-2 AS with 3-556 AL & 1-4/0 AA from WE346-20 to WE346-109	1.51
5	Colony Bay	Inverness	Replace 3-556AL & 1-159AS Spacer Cable with 3-556AL & 1-4/0AA from AL471-474 to AL471-76	0.60
6	Silver Lake	Rolling Prairie	Reconductor 4 CU with 3-556 AL and 1-4/0 AA Neutral from LP0236000085 to LP0215000077	0.79
7	Countryside	Jimtown	Reconductor mixed 4 AS and 2 AA two phase with 4-#2AA from EL0270000354 to EL0269000042	1.04
8	New Carlisle	Hudson	Reconductor 4 CU with 4-#2AA from JO0173000041 to LP0176000187.	0.46
9	Darden Road	Auten Rd	Reconductor 4 AS with 4-#2AA from BE0716000015 to JO0113000011.	0.50
10	Albany	Albany	Reconductor DE30B3-6 to DE30B4-11, 4CU to 2AA	0.13
11	Albany	Albany	RA1-11 to JA92-52, Replace 4CU and 6A CC with 556AL	1.80
12	Blaine Street	Luick Avenue	Reconductor DE0088000172 to DE0088000309, 4AS to 2AA	0.71
13	Albany	Albany	Reconductor RA0001000007 to RA0002000016, 4AS to 2AA	1.20
14	Fairmount	West 8Th	Reconductor GR0080000014 to GR0091000019, 6A CC and 4AS to 2AA	1.49
			Total	14.2
			Estimated Labor Cost	$3,103,489
			Estimated Material Cost	$806,366
			Estimated Total Capital	$3,909,854

Voltage Conversion 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Jobes	Central Commercial	Convert from 4kV to 12 kV	0.25
2	Mcclure	Industrial	Convert from 4kV to 12 kV	0.63
3	Mcclure	Industrial	Convert from 4kV to 12 kV	0.11
4	Jobes	East Commercial	Convert from 4kV to 12 kV	0.35
5	Mcclure	Industrial	Convert from 4kV to 12 kV	0.60
			Total	1.9
			Estimated Labor Cost	$469,121
			Estimated Material Cost	$117,863
			Estimated Total Capital	$586,984

Voltage Conversion 2022				
Map Reference Number	Station	Circuit	Description	Miles
1	Mcclure	E. Commercial	Convert from 4kV to 12 kV	2.09
2	McClure	E. Commercial	Convert from 4kV to 12 kV	0.19
			Total	2.3
			Estimated Labor Cost	$567,236
			Estimated Material Cost	$142,514
			Estimated Total Capital	$709,750

Circuit Ties 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Cross Street	Moonville	Reconductor 2CU and 2AS with 556AL from MA0056000057 to MA0056A40004, DE0061000041 to MA0056000018	2.53
2	Fairmount	Fowlerton	Reconductor circuit tie between Gaston - Matthews and Fairmount - Fowlerton.	1.58
3	Hartford City	North	Reconductor various small wire to 556AL from BL24-229 to BL17-236 for tie between Hartford City - North and Montpelier - Roll	1.24
4	Lusher Avenue/ Whitaker	Warrior/ River	Reconductor various small wire to 556AL from EL231-970 to EL230-2099	0.53
5	Studebaker/Kankakee	Hawk/Sample	Reconductor 1/0CU & 4/0CU to 556AL from JO0282000709 to JO0282000829	0.30
6	Lusher Avenue/ Conant	Hart/No.1	Reconductor 4/0CU to 556AL from EL0232000080 to EL0232000074 and 3/0AS to 556AL from EL0233000006 to EL0212000178	0.29
7	Studebaker/West Side	Hawk/No. 6	Reconductor 2AA to 556AL from JO0258001675 to JO0258001880	0.16
			Total	6.6
			Estimated Labor Cost	$968,833
			Estimated Material Cost	$269,452
			Estimated Total Capital	$1,238,285

Circuit Ties 2022				
Map Reference Number	Station	Circuit	Description	Miles
1	South Berne	Yager	Reconductor to 556AL from AD0384000091 to AD0371000031	2.00
2	East Side/East Side	Hastings/IUSB	Reconductor to 556 AL from JO0261000124 to JO0261000363.	0.74
3	Mackey/ County Road 4	Miles/ Airport	Reconductor to 556 AL from EL0188000329 to EL0167000034 .	1.27
4	Hummel Creek	West	Reconductor various small wire to 556AL from GR17C-70 to GR19-210; New tie to Van Buren-Landess	3.70
5	Hummel Creek	West	Reconductor 4 CU to 556AL from GR18-78 to GR18B4-12; New tie to Dooville-Hanfield	1.50
6	Van Buren	Vanburen	Reconductor 1/0AS with 556AL from GR0021A40045 to Gr0043000035	4.60
			Total	13.8
			Estimated Labor Cost	$2,083,434
			Estimated Material Cost	$579,445
			Estimated Total Capital	$2,662,880

Sectionalizing 2021				
Map Reference Number	Station	Circuit	Description	Units
1	McKinley	Engle	Review and modify sectionalizing on circuit	1
2	South Decatur	Gage	Review and modify sectionalizing on circuit	1
3	Darden Road	East	Review and modify sectionalizing on circuit	1
4	South Side	Wildcat	Review and modify sectionalizing on circuit	1
5	Cleveland	Park Forest	Review and modify sectionalizing on circuit	1
6	Hartford City	South	Review and modify sectionalizing on circuit	1
7	Twenty First Street	Arcadia	Review and modify sectionalizing on circuit	1
			Total	7
			Estimated Labor Cost	$61,236
			Estimated Material Cost	$112,214
			Estimated Total Capital	$173,450

Sectionalizing 2022				
Map Reference Number	Station	Circuit	Description	Units
1	Hillcrest	Dunbar	Review and modify sectionalizing on circuit	1
2	Wayne Trace	Stinson	Review and modify sectionalizing on circuit	1
3	Lydick	Town	Review and modify sectionalizing on circuit	1
4	Lydick	Country Club	Review and modify sectionalizing on circuit	1
5	South Bend	#3 - 12 Kv	Review and modify sectionalizing on circuit	1
6	Utica	Industrial	Review and modify sectionalizing on circuit	1
7	Mayfield	Waterworks	Review and modify sectionalizing on circuit	1
			Total	7
			Estimated Labor Cost	$59,316
			Estimated Material Cost	$108,695
			Estimated Total Capital	$168,011

Recloser Replacement 2021				
Map Reference Number	Station	Circuit	Description	Units
1	Adams	Linn Grove	AD0365000059 - Replace 70 V4L	1
2	Adams	Linn Grove	WE0372000049 - Replace 70 V4L	1
3	Carroll	Carroll	AL0236000013 - Replace 70 V4L	2
4	Colony Bay	Getz	AL0472000801 - Replace 140 V4L	1
5	Hacienda	Arlington	AL0336000108 - Replace 140 V4L	1
6	Countryside	Jimtown	EL0314000001 - Replace 140 V4L	1
7	Countryside	Homestead	EL0314000095 - Replace 140 V4L	1
8	County Road 4	Garver Lake	EL0126000050 - Replace 140 V4L	1
9	Dunlap	River Manor	EL0255000167 - Replace 140 V4L	1
10	Twin Branch	No 1	JO0377000058 - Replace 100 V4L	1
11	Strawboard	Dodge Creek	DE6-113, Replace 2-140 V4L	2
12	Gas City	Jonesboro	GR73A1-255, Replace 2-140 V4L	2
13	Gaston	Wheeling Pike	DE13-112, Replace 140 V4L	1
14	Jay	Redkey	JA81B3-66, Replace 70 V4H	1
15	Lynn	Lynn	RA96-68, Replace 2-100 V4L	2
16	Lynn	Lynn	RA97-71, Replace 2-70 4H	2
17	Lynn	Lynn	RA98C4-42, Replace 2-50 V4H	2
18	Selma Parker	Parker	RA12-87, Replace 70 V4H	1
19	Selma Parker	Parker	RA12-147, Replace 70 V4H	1
20	Selma Parker	Parker	RA23-24, Replace 100 V4H	1
21	Selma Parker	Parker	RA23-100, Replace 100 V4H	1
22	Selma Parker	Parker	RA45-142, Replace 140 V4L	1
23	South Elwood	Dundee	MA42-283, Replace 100 V4H	1
24	Twenty-First Street	Cowan	DE107-33, Replace 70 V4H	1
25	Wabash Ave.	South	BL29-142, Replace 140 V4L	1
26	Wabash Ave.	South	BL37-167, Replace 100 V4H	1
27	Wes Del	Harrison	DE34-129, Replace 100 L	1
			Total	33
			Estimated Labor Cost	$61,748
			Estimated Material Cost	$113,152
			Estimated Total Capital	$174,899

Recloser Replacement 2022				
Map Reference Number	Station	Circuit	Description	Units
1	Ireland Road	South Main 12 Kv	JO0350000121 Replace 1-200 V4L	1
2	Osolo	#3 - 12 Kv	EL0126000385 Replace 1-140 V4L	1
3	Drewrys	Wilber 12 Kv	JO0209000203 Replace 2-140 V4L	2
4	Quinn	Lakeville 12 Kv	JO0461000217 Replace 1-140 V4L	1
5	Marquette	MC	LP0206000079 Replace 1-140 V4L	2
6	North Portland	North	JA0029000188 Replace 1-100 V4H	1
7	Peacock	Summitville	MA0007000043 Replace 1-70 V4H	1
8	Peacock	Summitville	MA0008000018 Replace 1-70 V4H	1
9	Peacock	Summitville	MA0016000122 Replace 1-70 V4H	1
10	Portland	Commerical	JA0050B30020 Replace 1-100 V4L	1

11	Portland	East	JA0063000063 Replace 2-70 V4H	2
12	Portland	Sheller	JA0060000205 Replace 1-100 V4H	1
13	Randolph	Chestnut	RA0053000317 Replace 1-70 V4H	1
14	Randolph	Jackson	RA0033000103 Replace 2-100 V4L	2
15	Randolph	Jackson	RA0033000156 Replace 1-100 V4L	1
			Total	19
			Estimated Labor Cost	$35,704
			Estimated Material Cost	$65,426
			Estimated Total Capital	$101,130

Capacitor Replacement 2021

Map Reference Number	Station	Circuit	Description	Units
1	Bixler	Industrial	NO0243000183- Replace 600 KVAR Switched	1
2	Bixler	Industrial	NO0243000194- Replace 900 KVAR Switched	1
3	Butler	City	DK0264000061- Replace 900 KVAR Switched	1
4	Butler	Rural	DK0326000091- Replace 900 KVAR Switched	1
5	Butler	City	DK0264000116- Replace 900 KVAR Switched	1
6	Tri Lakes	Shriner	WH0123000089- Replace 450 KVAR Switched	1
7	Adams	Vera Cruz	AD0351000019- Replace 600 KVAR Switched	1
8	Muldoon Mill	Monmouth	AL0741000021- Replace 450 KVAR Switched	1
9	South Berne	Forest Park	AD0370000347- Replace 450 KVAR Switched	1
10	Cleveland	Memorial	EL0187000042 - Replace 900 KVAR Switched	1
11	Cleveland	Memorial	EL0165000009 - Replace 900 KVAR Switched	1
12	Darden Road	Lilac	JO0161000175 - Replace 900 KVAR Switched	1
13	Jackson Road	Scottsdale	JO0327000013 - Replace 900 KVAR Switched	1
14	Jackson Road	Scottsdale	JO0328000249 - Replace 900 KVAR Switched	1
15	Jackson Road	Scottsdale	JO0327000741 - Replace 900 KVAR Switched	1
16	Whitaker	River	EL0229000012 - Replace 450 KVAR Fixed	1
17	Blaine Street	Luick Avenue	DE77B1-49, Replace 900 KVAR Switched	1
18	Utica	Meadows	DE66B3-19, Replace 450 KVAR Switched	1
19	Modoc	Modoc	RA101-105, Replace 450 KVAR Switched	1
20	Royerton	Riggin	DE57A1-61, Replace 900 KVAR Switched	1
21	Selma Parker	Wapahani	DE79D0-45, Replace 900 KVAR Switched	1
22	South Elwood	Country Club	MA41-110, Replace 900 KVAR Switched	1
23	Twenty-First Street	Cowan	DE96-165, Replace 900 KVAR Switched	1
24	Utica	Forest Park	DE65B4-40, Replace 900 KVAR Switched	1
			Total	24
			Estimated Labor Cost	$144,972
			Estimated Material Cost	$124,898
			Estimated Total Capital	$269,870

Capacitor Replacement 2022				
Map Reference Number	Station	Circuit	Description	Units
1	Anthony	Wabash	AL0477000434- Replace 900 KVAR Switched	1
2	County Line	Leo	DK0466000045- Replace 900 KVAR Switched	1
3	Glenbrook	Fernhill	AL0389000700- Replace 900 KVAR Switched	1
4	Hadley	Hickory Pointe	AL0442001019- Replace 900 KVAR Switched	1
5	Muldoon Mill	Maples	AL0653000085- Replace 450 KVAR Switched	1
6	Reed	Bohde	AL0364000645- Replace 900 KVAR Switched	1
7	Spy Run	Delaware	AL0420000631- Replace 900 KVAR Switched	1
8	Mackey	Miles	EL0188000382 Replace 900 KVAR Switched	1
9	Mackey	Cap	EL0189000031 Replace 900 KVAR Switched	1
10	Mackey	General	EL0209000439 Replace 900 KVAR Switched	1
11	Mackey	Music	EL0209000247 Replace 450 KVAR Switched	1
12	Mackey	Music	EL0209001052 Replace 900 KVAR Switched	1
13	Conant	#3 - 12 Kv	EL0212000168 Replace 900 KVAR Switched	1
14	Conant	#3 - 12 Kv	EL0213000012 Replace 450 KVAR Switched	1
15	Conant	#3 - 12 Kv	EL0211001031 Replace 900 KVAR Fixed	1
16	Elwood	East	MA0026B30107 Replace 900 KVAR Switched	1
17	Grant	North	GR0027D40265 Replace 900 KVAR Switched	1
18	Haymond	Riverside	DE0066A10013 Replace 900 KVAR Switched	1
19	Marion	North	GR0028B40031 Replace 450 KVAR Switched	1
20	Mcgalliard	Mall	DE0056C20104 Replace 900 KVAR Switched	1
21	Mcgalliard	Morningside	DE0056C40037 Replace 900 KVAR Switched	1
22	Selma Parker	Parker	RA0023000073 Replace 900 KVAR Switched	1
			Total	22
			Estimated Labor Cost	$137,950
			Estimated Material Cost	$118,848
			Estimated Total Capital	$256,798

Porcelain Cutout & Arrester Replacement 2021			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace porcelain cutouts and arresters	515
Various - Ft. Wayne	Various	Replace porcelain cutouts and arresters	1,581
Various - S. Bend	Various	Replace porcelain cutouts and arresters	1,723
		Total	3,819
		Estimated Labor Cost	$941,524
		Estimated Material Cost	$311,756
		Estimated Total Capital	$1,253,280

Porcelain Cutout & Arrester Replacement 2022			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace porcelain cutouts and arresters	229
Various - Ft. Wayne	Various	Replace porcelain cutouts and arresters	1,459
Various - S. Bend	Various	Replace porcelain cutouts and arresters	723
		Total	2,411
		Estimated Labor Cost	$612,150
		Estimated Material Cost	$202,694
		Estimated Total Capital	$814,844

Crossarm Replacement 2021			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	51
Various - Ft. Wayne	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	152
Various - S. Bend	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	51
		Total	254
		Estimated Labor Cost	$504,675
		Estimated Material Cost	$117,859
		Estimated Total Capital	$622,534

Crossarm Replacement 2022			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	26
Various - Ft. Wayne	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	184
Various - S. Bend	Various	Replace deteriorated crossarms and insulators identified from the overhead inspection program	58
		Total	268
		Estimated Labor Cost	$550,469
		Estimated Material Cost	$128,553
		Estimated Total Capital	$679,023

URD Cable Replacement 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Hillcrest	Dunbar	Replace Cable from AL0563000833 to AL0563000840	0.33
2	State Street	Lahmeyer	Replace cable from AL0394000379 to AL0423000451 & LF Xfmr AL0423000336	0.38
3	Trier	Walden	Replace LF Xfmr AL0423000902 with Deadfront Xfmr	0.04
4	Thomas Road	Apple Glen	Replace LF Xfmr AL0473000592 with Deadfront Xfmr	0.04
5	State Street	Trier	Replace cable from AL0421001003 to AL0421000963	0.23
6	Parnell	Coliseum	Replace cable from AL0362000368 to AL0362000396	0.43
7	Lincoln	Maysville	Replace cable from AL0423000770 to AL0424000129	0.46
8	Lincoln	Maysville	Replace cable from AL0450000109 to AL0450000356 & AL0450000334 to AL0450000345	0.24
9	Hadley	Flaugh	UGR from Riser AL0387000346 to LF XFMR AL0387000351	0.03
10	Hadley	Sutton	Replace cable from AL0472000516 to LF XFMR AL0472000526	0.04
11	Hadley	Sutton	Replace cable from AL0472000453 to LF XFMR AL0472000538	0.12
12	Aviation	Apache	Replace cable from AL0590000652 to LF XFMR AL0590000659 & AL0590000660	0.25
13	Indiana- Purdue University	Canterbury #4	Replace LF Xfmr AL0362000115 with Deadfront Xfmr	0.04
14	Indiana- Purdue University	Chiller #1/IUPU #1	Replace LF Xfmr AL0362000225 with Deadfront Xfmr	0.04
15	Colony Bay	Medical Park	Replace LF Xfmr AL0499000256 with Deadfront Xfmr	0.04
16	Reed	Brookside	Replace Cable from AL335-602 to AL335-601 & LF Xfmrs AL334-357, AL334-358, AL334-362, & AL334-363 with Deadfront Xfmrs	0.37
17	Waynedale	Lakewood	Replace Cable from AL0533000535 to AL0533000375	0.32
18	State Street	Lahmeyer	Replace Cable from AL0423000441 to AL0423000444 & LF Xfmr AL0423000780 with Deadfront Xmfr	0.42
19	Butler	City	Replace cable from DK0244000417 to DK0244000418	0.22
20	Lincoln	Parrott	Replace cable between riser AL0482000839 and xfmr AL0482000847	0.04
21	Wayne Trace	Meyer	Replace cable between AL509-345 and AL509-347	0.28
22	Butler	City	Replace cable between DK0244000405 to DK0244000427	0.12
23	Decatur	Root	Replace Cable from AD0182000249 to Xfmr AD0183000750 & LF Xfmr AD0182000248 with Deadfront Xfmr	0.15
24	Muldoon Mills	Maples	AL0653000153 to AL0653000136 & LF Xfmr AL0693000570	0.38
25	Aviation	Warthog	AL0647000110 to LF XFMR AL0647000111	0.05
26	Colony Bay	Colony	Replace cable from AL0500000451 to LF XFMR AL0501000619	0.04
27	Colony Bay	Colony	Replace cable from AL0501000423 to LF XFMR AL0501000422	0.01
28	Grabill	Antwerp	Replace cable between risers AL224-129 and AL224-166	0.18

29	Hacienda	Hartford	Replace cable from AL0365000747 to AL0365000741	0.04
30	Hillcrest	Dunbar	Replace cable from AL0563000600 to AL0563000838	0.50
31	Hillcrest	Southtown #2	Replace cable from AL0593000255 to LF XFMR AL0593000272	0.10
32	Industrial Park	Summit	UGR from Riser AL0359000743 to LF XFMR AL0359000742	0.05
33	Lincoln	Parrott	Replace cable from AL0482000654 to AL0482000653	0.38
34	Parnell	Northcrest	Replace cable from AL0361000090 to LF XFMR AL0361000921	0.03
35	Parnell	Northcrest	Replace cable from AL0390001262 to LF XFMR AL0390001425	0.04
36	Parnell	University	Replace cable from AL0391000763 to LF XFMR AL0391000526	0.05
37	Reed	Brookside	Replace cable from AL334-689 to AL334-382 & LF Xfmrs AL334-381 & AL334-382	0.10
38	Robison Park	Auburn Road	Replace cable between risers AL303-615 and AL303-602	0.78
39	State St.	Brentwood	Replace cable from AL0422000454 to LF XFMR AL0422000459	0.02
40	Thomas Road	Parkwest	Replace cable from AL0444000156 to LF XFMRs AL0473000661 & AL0473000662	0.17
41	Thomas Road	Parkwest	Replace cable from AL0444000283 to LF XFMR AL0444000289	0.01
42	Waynedale	Lakewood	Replace cable from AL0533000369 to AL0533000365	0.25
43	Colony Bay	Getz	Replace cable from AL0500000570 to Xfmr AL0500000576	0.19
44	Swanson	No 2	Replace cable from JO0119000053 to JO0119000010	0.32
45	South Bend	No 2	Replace cable from JO0237000498 to JO0237000550	0.11
46	Mackey	Cap	Replace cable from EL0189001000 to EL0189001118	0.17
47	Mackey	Cap	Replace cable from EL0189000020 to EL0189000017	0.21
48	Mackey	Cap	Replace cable from EL0189000847 to EL0189000638	0.23
49	South Bend	No 3	Replace cable from JO0237000715 to JO0237000718	0.04
50	South Bend	No 2	Replace cable from JO0237000706 to JO0237000921	0.25
51	South Bend	No 2	Replace cable from JO0237000772 to JO0237000714	0.12
52	Mackey	Cap	Replace cable from EL0189001159 to EL0189001160	0.10
53	Conant	No 3	Replace cable from EL0214000032 to EL0193000505	0.07
54	Darden Road	Douglas	Replace cable from JO0188000352 to JO0188000351	0.13
55	Swanson	No 1	Replace cable from JO0164000480 to JO0164000479	0.50
56	East Side	Ironwood	Replace cable from JO0328000362 to JO0328000375	0.24
57	Cleveland	Memorial	Replace cable from EL0164000011 to EL0164000012	0.73
58	South Bend	No 2	Replace cable from JO0236000975 to JO0236001171	0.04
59	Beech Road	Dunn	Replace cable from JO0220000027 to JO0220000180	0.13
60	German	No 3	Replace cable from JO0184000274 to JO0184000275	0.04

61	Jackson Road	Lafayette	Replace XFMR JO0327000814	0.04
62	Blaine Street	Luick Avenue	Replace cable from DE88-262 to DE88-469	0.07
63	Hummel Creek	South	Replace cable from GR28B1-247 to GR28B1-249	0.08
64	Linwood	Linwood	Replace cable from MA54D1-15 to MA54D1-74	0.16
65	Wes Del	Harrison	Replace cable from DE54B1-3 to DE54B1-372; 367-362; 369-360	0.38
66	Wes Del	Farmington	Replace cable from DE45-581 to DE45B4-47; 51-58, DE45B2-22 to DE45B2-60	0.35
67	Wes Del	Farmington	Replace cable from DE45B2-2 to DE45B2-31; DE45B2-44 to DE45B2-37	0.32
68	Cross Street	Moonville	Replace cable from MA63A1-34 to MA63A1-38; MA63A1-43 to 51; MA63A1-4 to MA63A1-58; MA63-255 to MA63A1-14	0.57
69	Cross Street	Moonville	Replace cable from MA63A1-69 to MA63A1-83	0.39
			Total	13.8
			Estimated Labor Cost	$1,530,684
			Estimated Material Cost	$155,565
			Estimated Total Capital	$1,686,249

URD Cable Replacement 2022				
Map Reference Number		Circuit	Description	Miles
1	Anthony	Wallace	Replace cable from AL0477002085 to AL0477002043	0.84
2	Butler	City	Replace cable from DK0244000493 to Xfmr DK0244000495	0.12
3	Lincoln	Parrott	Replace cable from AL0482001204 to AL0482000839	0.49
4	Hillcrest	Dunbar	Replace cable from AL0563000606 to AL0563000577	0.40
5	Butler	City	Replace cable from DK0244000525 to DK0244000527	0.17
6	Butler	City	Replace cable from DK0244000374 to DK0244000371	0.13
7	Butler	City	Replace cable from DK0243000310 to DK0243000318	0.13
8	Hacienda	Arlington	Replace cable from AL0366000466 to AL0366000463	1.36
9	Hacienda	Maplewood	Replace cable from AL0394000053 to AL0394000051	0.84
10	Ossian	Mill	Replace cable from WE0137000022 to WE0137000021	0.85
11	Dunlap	3S.-12kV	Replace cable from EL0276000467 to EL0276000392	1.19
12	Jackson Road	South Main	Replace cable from JO0348000064 to JO0348000065	1.18
13	Marquette	Toll Road	Replace cable from LP0208000234 to LP0208000248	0.39
14	Swanson	No 2	Replace cable from JO0118000005 to JO0118000010	2.00
15	Kenmore	Hospital	Replace cable from DE0065B30200 to DE0065B30214	0.12
16	Wesdel	Harrison	Replace cable from DE0033000245 to DE0033000298	0.10
17	Rosehill	Rosehill	Replace cable from MA0069C10005, MA0069C10008 to MA0069C10010, and MA0061000017 to MA0076C10014	0.40

18	Kenmore	Hospital	Replace cable from DE0065D10433 to DE0065D10321	0.45
19	Elmridge	Hines Road	Replace cable from DE0075D20288 - DE0075D10081	0.05
20	Kenmore	Jackson	Replace cable from DE0065B30009 to DE0065B30221 and DE0065B30173 to DE0065B3-221	0.28
21	Linwood	Linwood	Replace cable from MA0054D10011 to MA0054D10079 and MA0054D10007 to MA0054D10079	0.76
22	Wesdel	Anthony	Replace cable from DE0035D40092 to DE0035D40092	0.59
23	Wesdel	Anthony	Replace cable from DE0035B30013 to DE0035B30015 and DE0035B30054 to DE0035B30064	0.60
24	Wesdel	Harrison	Replace cable from DE0044000075 to DE0044000392	0.20
			Total	13.6
			Estimated Labor Cost	$1,562,096
			Estimated Material Cost	$158,758
			Estimated Total Capital	$1,720,854

Underground Station Exit Cable Replacement 2021				
Map Reference Number	Station	Circuit	Description	Feet
1	Parnell	Northcrest	Replace w/ 1000 MCM AL with 6" CDT	470
2	Parnell	University	Replace w/ 1000 MCM AL with 6" CDT	265
3	Parnell	Coliseum	Replace w/ 1000 MCM AL with 6" CDT	216
4	Dunlap	River Manor	Replace w/ 1000 MCM AL with 6" CDT	390
5	German	Munich	Replace w/ 1000 MCM AL with 6" CDT	487
6	Bethel	Brook	Replace UG exit with OH	534
			Total	2,362
			Estimated Labor Cost	$430,296
			Estimated Material Cost	$116,027
			Estimated Total Capital	$546,323

Underground Station Exit Cable Replacement 2022				
Map Reference Number	Station	Circuit	Description	Feet
1	Anthony	Tokheim	Replace w/ 1000 MCM AL with 6" CDT	111
2	Osolo	No 4 & No 5	Replace w/ 1000 MCM AL with 6" CDT	950
3	County Road 4	Simonton Lake, Garver Lake &Airport	Replace w/ 1000 MCM AL with 6" CDT	2,488
			Total	3,549
			Estimated Labor Cost	$666,051
			Estimated Material Cost	$179,598
			Estimated Total Capital	$845,649

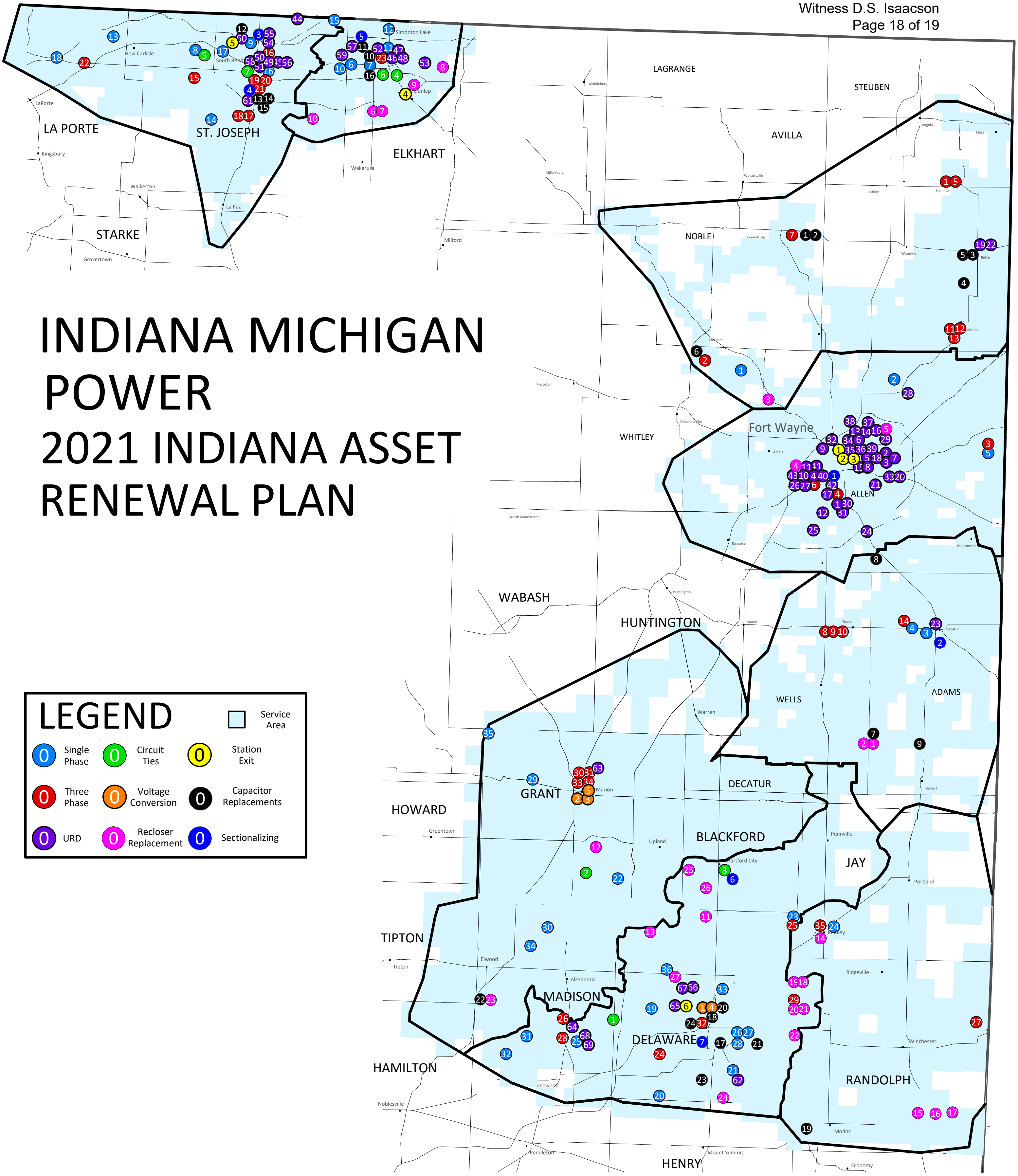
UG Network Program 2021			
Map Reference Number	Network	Description	Estimated Capital Cost
1	Ft. Wayne Network	Primary Equipment Installation	$1,210,255
1	Fort Wayne Network	Civil Construction	$344,353
2	Muncie Network	Primary Equipment Installation	$366,037
3	South Bend Network	Civil Construction	$237,913
3	South Bend Network	Civil Construction	$465,407
4	South Bend Network	Primary Equipment Installation	$1,514,578
		Estimated Labor Cost	$1,014,820
		Estimated Material Cost	$3,123,724
		Estimated Total Capital	$4,138,544

UG Network Program 2022			
Map Reference Number	Network	Description	Estimated Capital Cost
1	Ft. Wayne Network	Primary Equipment Installation	$1,372,871
1	Fort Wayne Network	Civil Construction	$867,775
2	Muncie Network	Primary Equipment Installation	$459,200
3	South Bend Network	Primary Equipment Installation	$2,289,879
3	South Bend Network	Civil Construction	$674,936
		Estimated Labor Cost	$1,662,179
		Estimated Material Cost	$4,002,481
		Estimated Total Capital	$5,664,660

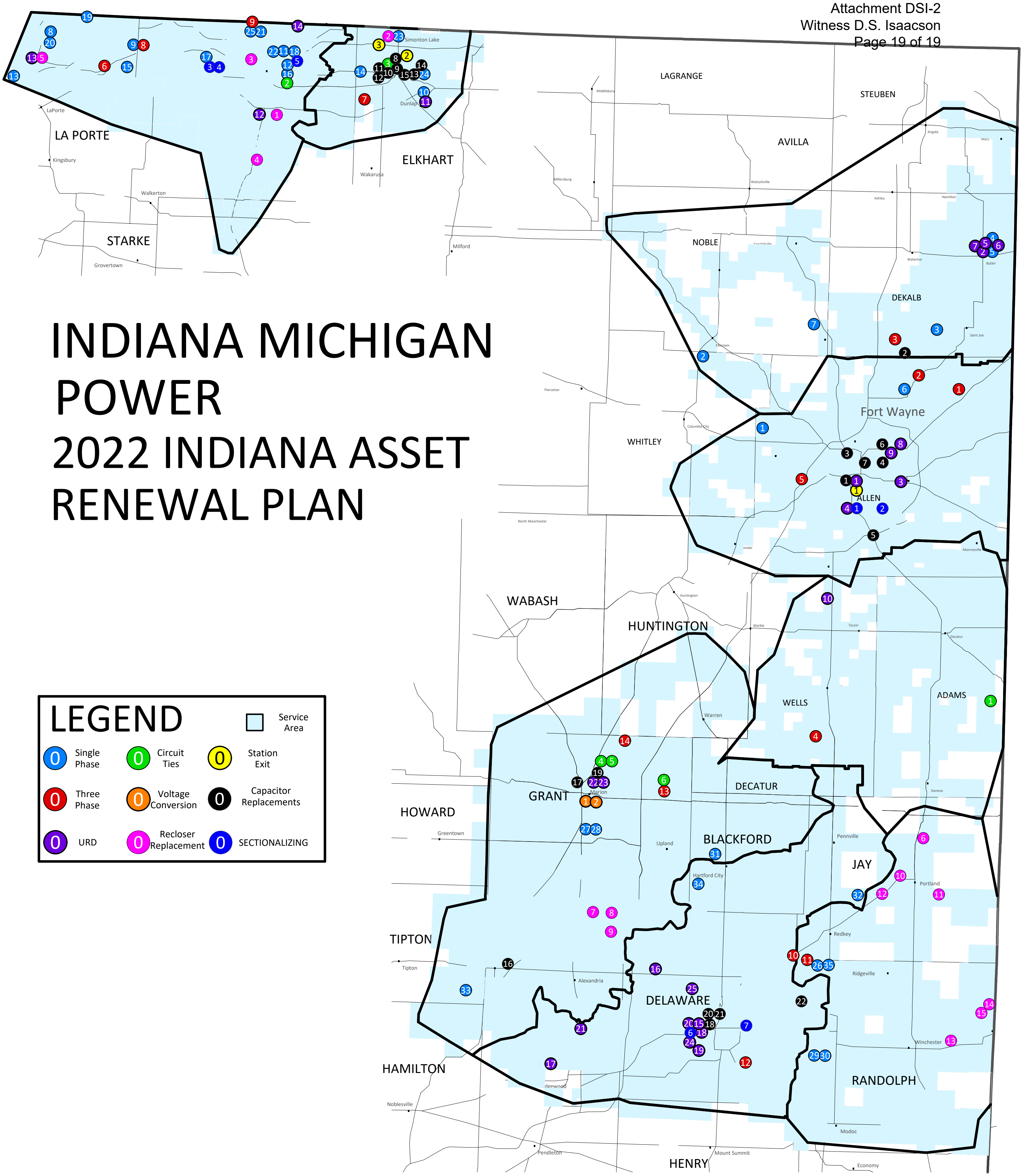
Pole Replacement 2021			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated poles identified from the pole inspection program	613
Various - Ft. Wayne	Various	Replace deteriorated poles identified from the pole inspection program	387
Various - S. Bend	Various	Replace deteriorated poles identified from the pole inspection program	199
		Total	1,199
		Estimated Labor Cost	$3,658,997
		Estimated Material Cost	$851,589
		Estimated Total Capital	$4,510,587

Pole Replacement 2022			
Station	Circuit	Description	Units
Various - Muncie	Various	Replace deteriorated poles identified from the pole inspection program	653
Various - Ft. Wayne	Various	Replace deteriorated poles identified from the pole inspection program	411
Various - S. Bend	Various	Replace deteriorated poles identified from the pole inspection program	212
		Total	1,276
		Estimated Labor Cost	$4,012,647
		Estimated Material Cost	$933,897
		Estimated Total Capital	$4,946,544

INDIANA MICHIGAN POWER
2021 INDIANA ASSET RENEWAL PLAN



INDIANA MICHIGAN POWER
2022 INDIANA ASSET RENEWAL PLAN



Indiana Michigan Power - Indiana Combined Projects Management Plan

Note that estimates are Class 3 or higher estimates

Combined Projects 2021 Summary					
Map Reference Number	Station	Description	Estimated 2021 Capital Labor Cost	Estimated 2021 Capital Material Cost	Estimated 2021 Capital Cost
1	West End Station	Rebuild 34/12 kV station with 3-12 kV Feeders, Convert 4 kV to 12 kV.	$766,526	$830,404	$1,596,930
2	Arnold Hogan	New 138/12 kV Station with 6-12 kV Feeders. Replace 34.5/12 kV Elmridge Station	$815,746	$883,724	$1,699,470
3	Blaine Street Station	Replace the 34.5/12 kV 9.375 MVA with 20 MVA and add 2-12 kV Feeders	$2,621,338	$2,839,783	$5,461,121
4	Dean Station	New 69/12 kV Station with 4-12 kV Feeders. Replaces Peacock and Fairmount.	$3,509,052	$3,801,474	$7,310,526
5	Hartford City Improvements D-Line	Rebuild/Multiphase 12.6 Miles of 12 kV Feeder	$825,887	$485,044	$1,310,931
6	Wes Del Station	Install Conventional 12 kV bus with 4-12 kV Feeders, Replaces switchgear	$2,224,970	$2,410,384	$4,635,354
7	SDI Improvements D-Line	Rebuild/Multiphase 1.5 Miles of 12 kV Feeder	$145,536	$85,473	$231,009
8	Upland Station	Install 69kV circuit switcher, 2-12kV Distribution Circuit Breakers and SCADA	$702,268	$760,790	$1,463,058
9	Pennville Station	Replace 138kV MOAB and upgrade obsolete bus architecture	$81,707	$88,516	$170,223
10	New Carlisle D-Line	1.60 miles D-Line construction to complete 3-12kV Feeders from expanded New Carlisle Station, bolsters tie to Silver Lake Station.	$148,191	$160,540	$308,731
11	BootJack D-Line	2.22 miles D-line construction to complete 4-12kV Feeders from Expanded Silver Lake Station and bolster line tie to New Carlisle Station via Bootjack Rd. Replaces 2-12kV Silver Lake Station	$169,629	$183,764	$353,393
12	Marquette D-Line	4.82 miles D-line construction to complete 4-12kV Feeders from Marquette Station. Replaces Springville Station	$459,543	$497,838	$957,381
13	Muessel D-Line	Line Exit work to in-service New 69/12 kV Station with 4-12 kV Feeders. Replaces Drewry Station	$114,111	$123,620	$237,731
14	Lydick D-Line formerly Lydick Station 34.5/69kV Conv	Companion 12kV relocation & bolster to be worked with Transmission sponsored rebuild to 69/12 kV 20 MVA	$197,811	$214,296	$412,107
		Total	$12,782,314	$13,365,651	$26,147,965

Combined Projects 2022 Summary					
Map Reference Number	Station	Description	Estimated 2022 Capital Labor Cost	Estimated 2022 Capital Material Cost	Estimated 2022 Capital Cost
1	Elwood Station	Rebuild Elwood Station with a 69/12 kV Station with 4-12 kV Feeders	$740,872	$802,611	$1,543,483
2	Ameriplex Station	New 138/12 kV 25 MVA Station with 3-12 kV Feeders	$1,361,955	$1,475,452	$2,837,407
3	Colfax	Install 69/12 kV 25 MVA transfomer with 3-12 kV circuits. Includes duct bank reconstruction	$609,004	$659,754	$1,268,758
4	McGalliard Rd	Rehab of the 12 kV facilities: Main Bus, replace 5 feeder CBs, Add HS Circuit Switcher	$382,115	$413,957	$796,072
5	Jay Station	Replace 138/12 kV 9.375 MVA transformer with 20 MVA and replace 2-12 kV Feeders	$894,455	$968,992	$1,863,447
		Total	$3,988,401	$4,320,766	$8,309,167

Muncie Area – West End Station

Project Description:

- Convert 4 kV distribution load to 12 kV
- Install a 34.5/12 kV 20 MVA transformer at West End Station.
- Install a new distribution bay and retire the existing distribution bay.
- Install three 12 kV distribution circuit breakers and exits.
- Retire all existing circuit breakers.
- Integrate one additional 12 kV feeders into existing distribution system.
- Retire all existing distribution facilities at West End
- Install station Supervisory Control and Data Acquisition (SCADA).
- In Service Date (ISD) =2021; 3 year project timeline.

Justification / Need for the Project:

Reconstruction of the West End distribution station is due to concerns of reliability and for modernization.

- Distribution assets at West End Station are in poor condition presenting an ever-increasing risk to area reliability.
- The 4 kV distribution line facilities are in poor condition and in need of rebuild.
- Transfer options for the West End 4 kV distribution are limited with only one circuit tie.
- The 4 kV distribution system in the area is capacity constrained leaving little room for load growth.

Distribution Line Component:

Convert all West End 4 kV load to 12 kV and install three 12 kV distribution exits.

- Rebuild and convert 4.0 miles of existing 4 kV distribution to 12 kV.
- Install three overhead distribution exits using 3-556 AL & 1-4/0 AA conductor.

Benefits of the Project:

- Conversion of 4 kV moves toward standardization of 12 kV as the primary distribution voltage modernizing the system.
- Conversion of distribution to 12 kV increases circuit tie capability through increased line capacity and additional transfer options being available.
- Relieves reliability concerns of aged equipment and improves the ability for contingency transfers.
- Increases system capacity to allow for future load growth.
- 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 – Arnold Hogan Station

Project Description:

- Replace the existing station transformer with a 20 MVA unit.
- Install a second 138/12 kV 20 MVA transformer at Arnold Hogan Station.
- Install two new distribution bays and retire the existing distribution bay.
- Install six 12 kV distribution circuit breakers and exits.
- Install a 12 kV bus tie circuit breaker.
- Integrate two additional 12 kV feeders into existing distribution system.
- Retire the existing Elmridge Station.
- Upgrade existing station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 3 year project timeline.

Justification / Need for the Project:

Reconstruction of the Arnold Hogan distribution station is due to concerns of capacity and reliability:

- Distribution assets at Elmridge Station are in poor condition presenting a risk to area reliability.
- The existing 138/12 kV transformer at Arnold Hogan is nearing the end of expected life.
- Elmridge Station is forecasted to be loaded to 102% of capacity in 2020.
- The existing 12 kV circuit breakers at Arnold Hogan are at the end their expected and present a risk of failure.

Distribution Line Component:

Relocate the four existing feeder exits and add two feeders to Arnold Hogan.

- Install six new underground distribution exits from Arnold Hogan station totaling 1800 feet in length using 3-1000 AL + 1-4/0 Cu cable.
- Reconstruct 1.2 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 Arnold Hogan Station relieves loading in this capacity-constrained area.
- Reduces reliability concerns related to aged equipment and improves the ability for contingency transfers.
- Elimination of 34 kV at Elmridge Station modernizes the system.
- 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 – Blaine Street Station

Project Description:

- Replace one existing station transformer at Blaine Street with a 20 MVA unit.
- Install one new distribution bay and retire one existing distribution bay.
- Install six 12 kV distribution circuit breakers and exits.
- Install a 12 kV bus tie circuit breaker.
- Integrate two additional 12 kV feeders into existing distribution system.
- Upgrade existing station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 3 year project timeline.

Justification / Need for the Project:

The replacement of the Blaine Street 9.375 MVA Transformer 5 and distribution bay is due to concerns of capacity and reliability:

- Excess distribution capacity has been reduced due to conversion of 4 kV distribution to 12 kV.
- The existing 12 kV feeder breakers are at the end of life and have been identified for proactive replacement.
- Load transfers in the Blaine Street area are limited due to the current circuit configuration.

Distribution Line Component:

Relocate one existing feeder exit and two new circuits to Blaine Street Station.

- Install three new underground distribution exits from Blaine Street Station totaling 1000 feet in length using 3-1000 AL + 1-4/0 Cu cable.
- Reconstruct 1.0 mile of existing 3-phase overhead line using 3-556 AL + 1-4/0 AA conductor.

Benefits of the Project:

- The additional capacity added at Blaine Street offsets the system capacity lost through retirement of 4 kV station assets.
- 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.

Muncie Area – Dean Station

Project Description:

- Build a new 69/12 kV station, called Dean.
- Install two new 69/12 kV, 12.5 MVA transformers.
- Install four 12 kV distribution circuit breakers and exits
- Retire Peacock and Fairmount stations
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 2 year project timeline.

Justification / Need for the Project:

Construction of the Dean Distribution station is due to concerns of capacity and reliability:

- Station assets at Peacock and Fairmount stations are in poor health and present a risk to reliability.
- Peacock Station is currently loaded to 90% of capacity.
- The transmission line serving Fairmount station has been targeted for rebuild or retirement
- The existing Fairmount and Peacock distribution circuits are out of phase with adjacent circuits creating the need to momentarily interrupt customers for transfers to adjacent stations.
- Neither Peacock or Fairmount stations have SCADA

Distribution Line Component:

- Install 2 new underground distribution exits from Dean Station totaling 500 feet in length using 3-1000 AL + 1-4/0 Cu cable.
- Reconstruct 5.0 miles of existing distribution line to 3-phase overhead line using 3-556 AL + 1-4/0 AA conductor.

Benefits of the Project:

- The additional capacity added at Dean 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 – Hartford City Area Improvements D-line

Project Description:

- Rebuild and multiphase of distribution line in conjunction with a transmission line build.
- Retire significant amounts of Distribution line in areas, which are hard to access.
- ISD =2021; 2 year project timeline.

Justification / Need for the Project:

Rebuild and relocation of distribution line in the rural Delaware and Blackford county areas is needed due to concerns of reliability:

- Significant amount of distribution line is under-built on sub transmission line not accessible by road.
- The existing distribution line consists of poles that are past their expected life span.

Distribution Line Component:

- Rebuild approximately 12.6 miles of distribution line to three-phase using 3-556 AL & 1-4/0 AA conductor.
- Retire the existing under-built distribution line
- Create a circuit tie between Royerton and the new Strawboard stations.

Benefits of the Project:

- Increased reliability and operational flexibility.

Muncie Area – Wes Del Station

Project Description:

- Install a new distribution bay and retire the existing switchgear.
- Install four 12 kV distribution circuit breakers and exits
- Upgrade existing station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 1 year project timeline.

Justification / Need for the Project:

Replacement of the switchgear at Wes Del Station is due to concerns of reliability:

- The existing 12 kV switchgear at Wes Del Station is at the end its life expected and presents a risk of failure.
- Repair parts for the obsolete switchgear are no longer available requiring that replacement parts must be custom made at a high expense and long lead-time.

Distribution Line Component:

Replace four existing feeder exits at Wes Del Station:

- Install four new underground distribution exits from Wes Del Station totaling 650 feet in length using 3-1000 AL + 1-4/0 Cu cable.

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.

Butler Area – SDI Improvements D-line

Project Description:

- Rebuild and multiphase of distribution line in conjunction with a transmission line build.
- ISD =2021

Justification / Need for the Project:

Rebuild and multiphasing of distribution line in the rural Dekalb county area is needed due to concerns of reliability:

- 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 – Upland Station

Project Description:

- Install a 69 kV circuit switcher on the transformer.
- Replace two 12 kV circuit breakers
- Upgrade station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 2 year project timeline.

Justification / Need for the Project:

Replacement of distribution facilities at Hartford City Station is due to concerns of reliability.

- Two existing 12 kV feeder breakers are at the end of life and has been identified for proactive replacement
- The existing transformer protection scheme is obsolete.
- Limited SCADA functionality of station devices.

Benefits of the Project:

- Updated transformer protection scheme allows for greater reliability
- Replacement of the existing obsolete feeder breakers reduces the risk of asset failure.
- 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 – Pennville Station

Project Description:

- Replace one 138 kV motor operated disconnect on high side of transformer
- Replace 138 kV bus structure and eliminate obsolete insulators
- ISD =2021; 1 year project timeline.

Justification / Need for the Project:

Replacement of facilities at Pennville Station is due to concerns of reliability.

- The existing 138 kV transformer disconnect is in poor condition and is in need of replacement.
- The existing transformer high side structure uses guyed wooden poles, which are deteriorated and in need of replacement.
- Obsolete bus insulators are at an increased risk of failure

Benefits of the Project:

- Replacement of the existing 138 kV motor operated switch and bus structure reduces the risk of asset failure.
- New equipment is more reliable for customers and more easily maintained.

South Bend Area – Bosserman-New Carlisle

Project Description:

- Construct two 138/12 kV distribution stations to replace Silver Lake 34.5 kV and Springville 69 kV stations
- Install 5 new 138kV Circuit Switchers
- Install a 138/12 kV transformer at New Carlisle station.
- Add 2 new distribution feeders at each new station.
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 1 year project timeline

Justification / Need for the Project:

Construction of the Bosserman and New Carlisle Stations is due to concerns of reliability:

- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations.
- Limited load recovery opportunities exist at both Silver Lake and Springville stations.

Distribution Line Component:

- 6 new station exits
- 8.64 miles of line construction
- 1 new station transformer and six 12kV circuit breakers

Benefits of the Project:

- Provides necessary transformation for contingency and planned outages for the New Carlisle, Silver Lake and Springville area.
- Provides for capacity for future distribution automation.
- The feeder additions will help improve area reliability and add in phase operational flexibility.

South Bend Area – Bootjack D-Line

Project Description:

- Extend 4 new feeders from Silver Lake distribution station to diversify existing load profile in the area.
- Install 1 new 138kV Circuit Switcher
- ISD =2021; 1 year project timeline

Justification / Need for the Project:

The project is due to concerns of reliability:

- Limited load recovery opportunities at Silver Lake station.
- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations

Distribution Line Component:

- 4 new station exits
- 2.22 miles of line construction
- 1 new station transformer and four 12kV circuit breakers

Benefits of the Project:

- Provides necessary transformation for contingency and planned outages for the New Carlisle and Silver Lake areas.
- Provides for capacity for future distribution automation.
- The feeder additions will help improve area reliability and add in phase operational flexibility.

South Bend Area – Marquette D-Line

Project Description:

- Extend 1 new feeder from Marquette distribution station
- ISD =2021; 1 year project timeline

Justification / Need for the Project:

The project is due to concerns of reliability:

- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations

Distribution Line Component:

- 1 new feeder exit
- 4.82 miles of line construction
- 1 distribution circuit breaker

Benefits of the Project:

- Addition of the fourth feeder from Marquette Station will reduce customer minutes of interruption.
- Provides necessary transformation for contingency and planned outages for the Marquette/Springville area
- Provides for capacity for future distribution automation.
- The feeder additions will help improve area reliability and add in phase operational flexibility.

South Bend Area – Muessel Station

Project Description:

- Construct Muessel Station (which will replace Drewry's station)
- Install 2 new 69kV Circuit Switchers
- Install 2 new 69kV transformers
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2021; 1 year project timeline

Justification / Need for the Project:

The project is due to concerns of reliability:

- Station equipment is deteriorated and has exceeded its expected useful life.
- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations

Distribution Line Component:

- 4 new station exits: 2 total underground exits, 0.09 miles line construction
- 2 new station transformers and 7-12kV circuit breakers

Benefits of the Project:

- Resolves the physical space limitations that restricts on-site mobile transformer installation
- Provides for capacity for future distribution automation.
- The source voltage conversion helps improve area reliability and adds in-phase operational flexibility.

South Bend Area – Lydick D-Line

Project Description:

- Rebuild feeder exits at existing Lydick 34.5kV Station
- ISD =2021; 1 year project timeline.

Justification / Need for the Project:

The project is due to concerns of reliability:

- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations

Distribution Line Component:

- Rebuild & relocate 0.5mi 3-556AL 12kV backbone and 400ft UG Exit cables from Lydick Station.
- Install sectionalizing switches and smart NOVA reclosers between sister 12kV Stations: West Side, German.

Benefits of the Project:

- The distribution line additions will help improve area reliability and operational flexibility.

Muncie Area – Elwood Station

Project Description:

- Replace the two existing station transformers at Elwood Station with two 69/12 kV 20 MVA units
- Install two new 12 kV distribution bays with regulated bus and retire the existing distribution structure.
- Install four 12 kV circuit breakers and exits.
- Install a 12 kV bus tie circuit breaker
- Integrate one additional 12 kV feeder in the existing distribution system
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2022; 3 year project timeline.

Justification / Need for the Project:

Reconstruction of distribution facilities at Elwood Station is due to concerns of reliability:

- Distribution assets at Elwood Station are in poor condition presenting a risk to area reliability.
- The existing Elwood distribution circuits are out of phase with adjacent circuits creating the need to momentarily interrupt customers for transfers due to out-of-phase circuit ties
- The current circuit configuration in the area limit the transfer capabilities.
- The existing 12 kV feeder breakers are at the end of life and have been identified for proactive replacement.

Distribution Line Component:

Relocate the three existing feeder exits and add one feeder to Elwood Station.

- Install four new underground distribution exits from Elwood Station totaling 500 feet in length using 3-1000 MCM AL + 1-4/0 CU cable.

Benefits of the Project:

- Allows for the conversion of the sub transmission system to 69 kV
- 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.

South Bend Area – Ameriplex Station

Project Description:

- Build a new 138/12 kV station, called Ameriplex.
- 1 new 138kV Circuit Switcher
- Install a new 138/12 kV, 25 MVA transformer.
- Install three 12 kV distribution circuit breakers and exits
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD = 2022

Justification / Need for the Project:

Ameriplex distribution station is needed due to concerns of reliability and expectation for load growth on the Darden Road and Pine Road stations:

- Darden Rd station is forecasted to reach 100% of it rated capability
- Service area is additionally capacity constrained with Pine Rd and German stations at near full utilization.
- Load in the Ameriplex industrial park continues to grow.

Distribution Line Component:

- 3 new feeder exits
- 5 miles line construction
- 1 new station transformer and three 12kV circuit breakers

Benefits of the Project:

- Relieves loading constraints and will help provide for future load growth.
- Provides for capacity for future distribution automation and Conservation Voltage Reduction
- Improves area reliability and adds in-phase operational flexibility.

South Bend Area – Colfax Station

Project Description:

- Rebuild Colfax Station
- Install 1 new 69kV Circuit Switcher
- Install 1 69/12kV, 25MVA transformer
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD = 2022; 2 year project timeline

Justification / Need for the Project:

The rebuild of the Colfax station is due to concerns of reliability:
- The 34.5kV Colfax station contains equipment that is obsolete
- This is a reliability constrained area with limited opportunities for out of phase load transfers during emergency situations

Distribution Line Component:

- 3 new underground exits
- 0.6 miles new duct bank line construction
- Install 4 distribution circuit breakers

Benefits of the Project:

- Resolves the physical space limitations that restricts on site mobile transformer and drive path issues
- Provides for capacity for future distribution automation.
- The source voltage conversion helps improve area reliability and adds in-phase operational flexibility.

Muncie Area – McGalliard Road Station

Project Description:

- Replace five 12 kV circuit breakers
- Replace undersized bus conductor and obsolete insulators
- Upgrade station Supervisory Control and Data Acquisition (SCADA).
- ISD =2022; 2 year project timeline.

Justification / Need for the Project:

Replacement of distribution facilities at McGalliard Road Station is due to concerns of reliability:

- Five existing 12 kV feeder breakers are at the end of life and have been identified for proactive replacement
- The existing bus conductor on both 12 kV buses is undersized for the transformers installed thus limiting full utilization of transformer capacity.
- Obsolete bus insulators are at an increased risk of failure
- Limited SCADA functionality of station devices.

Benefits of the Project:

- Replacement of the existing obsolete feeder breakers reduces the risk of asset failure.
- Increased capacity of station equipment allows for better operational flexibility
- 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 – Jay Station

Project Description:

- Replace the existing 138/12 kV transformer at Jay Station.
- Install a new distribution bay and retire the existing distribution bay.
- Install two 12 kV distribution circuit breakers and exits.
- Retire all existing circuit breakers.
- Install station Supervisory Control and Data Acquisition (SCADA).
- ISD =2022; 2 year project timeline.

Justification / Need for the Project:

Reconstruction of the Jay distribution station is due to concerns of reliability:

- The 138/12 kV transformer at Jay Station is in poor health and is at an increased risk of failure.
- The existing 12 kV feeder breakers are at the end of life and have been identified for proactive replacement.
- Limited SCADA functionality of station devices.

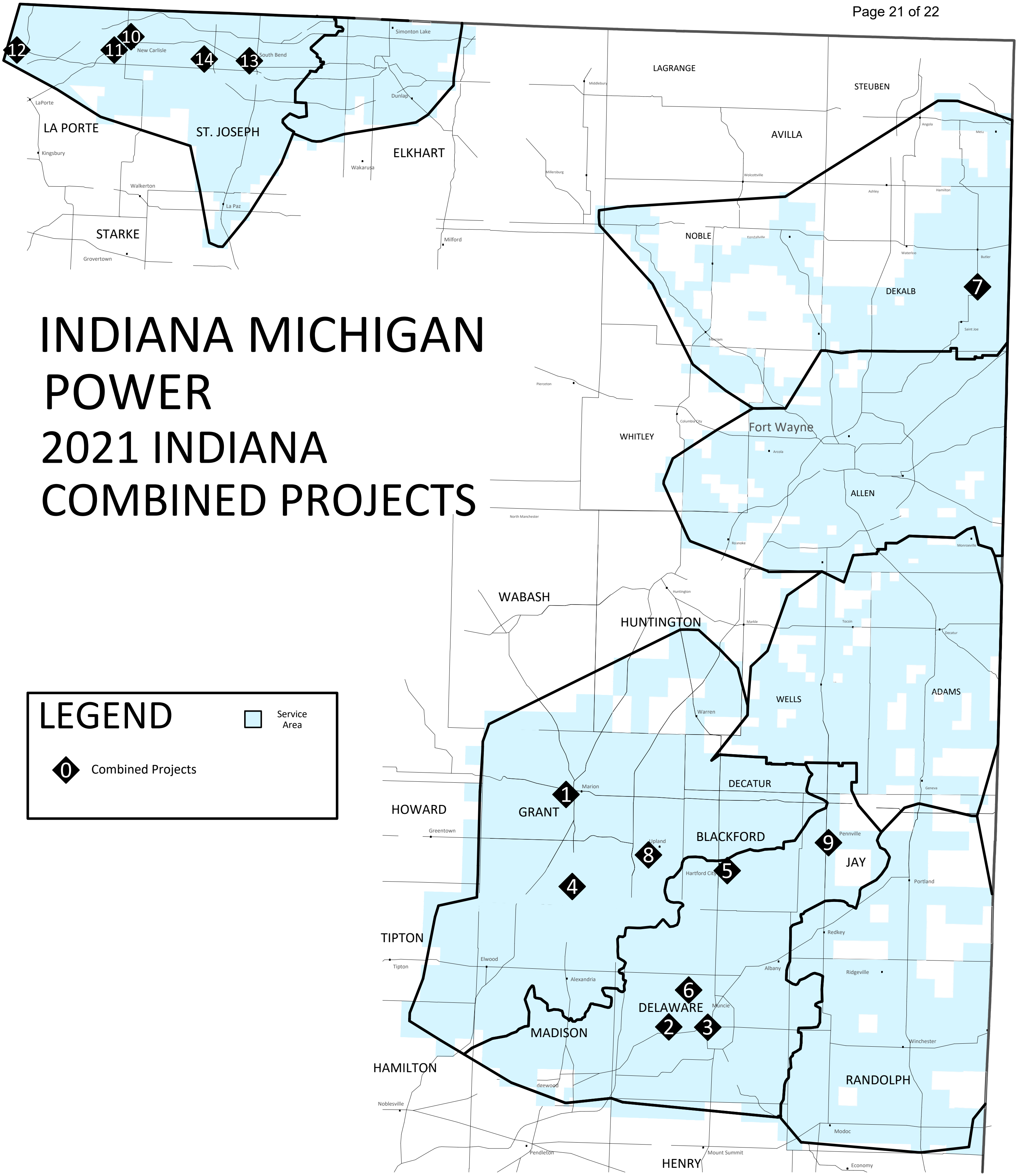
Distribution Line Component:

Install two underground 12 kV distribution exits.

- Install two new underground distribution exits from Jay Station totaling 400 feet in length using 3-1000 AL + 1-4/0 Cu cable.

Benefits of the Project:

- Relieves reliability concerns of aged equipment.
- Increases system capacity to allow for future load growth.
- 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.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2021 INDIANA COMBINED PROJECTS
LEGEND
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ST. JOSEPH
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AVILLA
NOBLE
DEKALB
STARKE
WHITLEY
Fort Wayne
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WABASH
HUNTINGTON
WELLS
ADAMS
HOWARD
GRANT
DECATUR
BLACKFORD
JAY
TIPTON
DELAWARE
MADISON
HAMILTON
RANDOLPH
HENRY
Marion
Upland
Hartford City
Muncie
Pennville
Portland
Redkey
Ridgeville
Winchester
Modoc
Albany
Elwood
Alexandria
Tipton
Greentown
Noblesville
Pendleton
Mount Summit
Economy
Warren
Huntington
Markle
Tocsin
Decatur
Geneva
Monroeville
Roanoke
Arcola
Columbia City
Pierceton
North Manchester
Milford
Walkerton
La Paz
Grovertown
Kingsbury
LaPorte
New Carlisle
South Bend
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Dunlap
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Wolcottville
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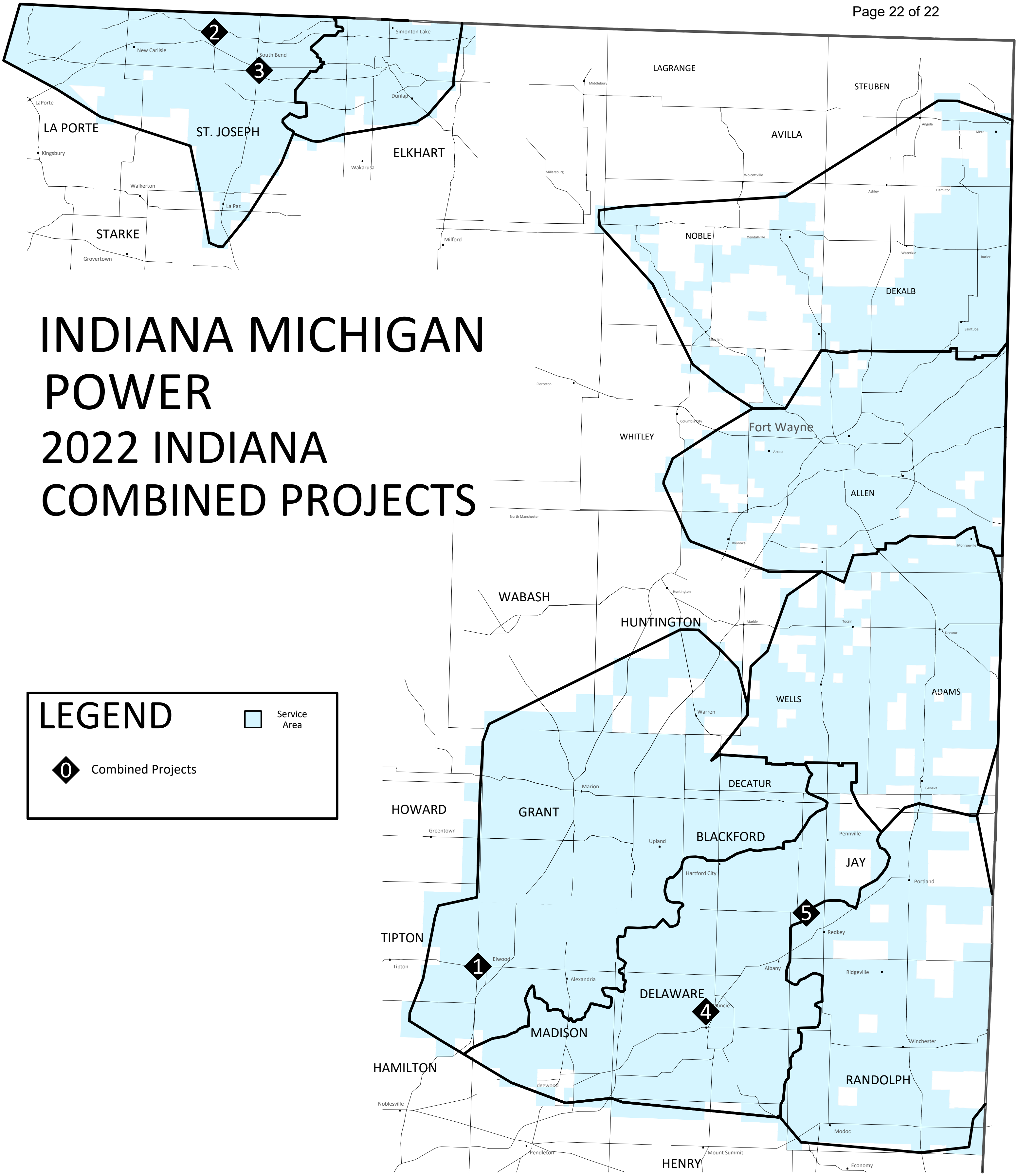
INDIANA MICHIGAN POWER
2022 INDIANA COMBINED PROJECTS
LEGEND
Service Area
Combined Projects
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ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
AVILLA
STARKE
NOBLE
DEKALB
WHITLEY
Fort Wayne
ALLEN
WABASH
HUNTINGTON
WELLS
ADAMS
HOWARD
GRANT
DECATUR
BLACKFORD
JAY
TIPTON
DELAWARE
MADISON
HAMILTON
RANDOLPH
HENRY
New Carlisle
South Bend
Simonton Lake
Dunlap
LaPorte
Kingsbury
Wakarusa
Walkerton
La Paz
Grovertown
Milford
Middlebury
Millersburg
Wolcottville
Kendallville
Angola
Hamilton
Ashley
Waterloo
Butler
Saint Joe
Pierceton
Columbia City
Arcola
North Manchester
Roanoke
Monroeville
Huntington
Markle
Tocsin
Decatur
Warren
Marion
Geneva
Greentown
Upland
Pennville
Hartford City
Portland
Redkey
Tipton
Elwood
Alexandria
Albany
Ridgeville
Muncie
Winchester
Noblesville
Pendleton
Mount Summit
Modoc
Economy

Indiana Michigan Power - Indiana Grid Modernization Management Plan
(Includes Sensors, Reclosers, Circuit Ties, DACR, and SCADA)

Note that estimates are Class 3 estimates

Distribution Line Sensors 2021				
Map Reference Number	Station	Circuit	Description	Units
1	Reed	Bohde	Install Distribution Line Sensors	9
2	South Berne	Yager	Install Distribution Line Sensors	3
3	Rob Park	Dupont	Install Distribution Line Sensors	9
4	Pleasant	Yoder	Install Distribution Line Sensors	24
5	County Line	Leo	Install Distribution Line Sensors	6
6	South Side	Wildcat, Eagle, Broadway	Install Distribution Line Sensors	34
7	Studebaker	Lark	Install Distribution Line Sensors	9
8	Dooville	Hanfield	Install Distribution Line Sensors	6
			Total	100
			Estimated Labor Cost	$31,342
			Estimated Material Cost	$282,079
			Estimated Total Capital	$313,421

Distribution Line Sensors 2022				
Map Reference Number	Station	Circuit	Description	Units
1	Granger	No 1,No 2, No 3, No 4, No 5, No 6	Install Distribution Line Sensors	90
2	Olive	West	Install Distribution Line Sensors	12
3	Silver Lake	Wirekraft	Install Distribution Line Sensors	12
4	Quinn	Lakeville	Install Distribution Line Sensors	12
5	Fairmount	Fowlerton	Install Distribution Line Sensors	6
			Total	132
			Estimated Labor Cost	$42,412
			Estimated Material Cost	$381,704
			Estimated Total Capital	$424,115

Smart Recloser Replacement 2021				
Map Reference Number	Station	Circuit	Description	Units
1	Woods Road	North	DK0458000002- RP with NOVA STS	1
2	Clipper	Garrett	DK0418000106 -RP with NOVA STS	1
3	Grabill	Page	AL0197000253 -RP with NOVA STS	1
4	Hamilton	Factory	DK0137000015-RP with NOVA STS	1

5	South Berne	Yager	AD0384000091-RP with NOVA STS	1
6	South Berne	Yager	DK0458000002-RP with NOVA STS	1
7	Grabill	Page	AL0225000019-RP with NOVA STS	1
8	Harlan	Notestine	AL0285000039-RP with NOVA STS	1
9	Illinois Road	Covington	AL0468000070-RP with NOVA STS	1
10	Reed	Bohde	AL0336000581-RP with NOVA STS	1
11	Trier	Walden	AL0393000911-RP with NOVA STS	1
12	Robison Park	Dupont	AL0306000155-RP with NOVA STS	1
13	Robison Park	Dupont	AL0306000024-RP with NOVA STS	1
14	Hacienda	Hartford	AL0365000531-RP with NOVA STS	1
15	Hacienda	Hartford	AL0393001075-RP with NOVA STS	1
16	Summit	Salomon	AL0301000009-RP with NOVA STS	1
17	Wallen	Windsor	AL0301000028-RP with NOVA STS	1
18	County Line	Leo	AL0170000071-RP with NOVA STS	1
19	Anthony	Tokheim	AL0479000467-RP with NOVA STS	1
20	Harvest Park	Main St	AL0480000922-RP with NOVA STS	1
21	Harvest Park	Main St	AL0479000629-RP with NOVA STS	1
22	Quinn	Lakeville	JO0461000055 - RP with NOVA STS	1
23	Silver Lake	Rolling Prarie	LP0236000083 - RP with NOVA STS	1
24	Cleveland	Discovery	JO0196000264 - RP with NOVA STS	1
25	County Road 4	Airport	EL0145000373 -RP with NOVA STS	1
26	Lusher Avenue	Hart	EL0233000068 - RP with NOVA STS	1
27	Northland	No 1	EL0150000045 - RP with NOVA STS	1
28	Northland	No 5	EL0194000003 - RP with NOVA STS	1
29	Whitaker	River	EL0229000658 - RP with NOVA STS	1
30	Twin Branch	No 1	JO0291000123 -RP with NOVA STS	1
31	West Side	No 6	JO0234000998 - RP with NOVA STS	1
32	Kankakee	Sample	JO0256000347 NOVA STS	1
33	Kankakee	Sample	JO0255000700 NOVA STS	1
34	Olive	Industrial	JO0180000041- RP with NOVA STS	1
35	Olive	Industrial	JO0179000096- RP with NOVA STS	1
36	Silver Lake	Rolling Prarie	LP0235000232- RP with NOVA STS	1
37	County Road 4	Airport	EL0145000345 - RP with NOVA STS	1
38	Lusher Avenue	No 1	EL0233000013 - RP with NOVA STS	1
39	South Side	Wildcat	JO0284000596 - RP with NOVA STS	1
40	East Side	Adams	JO0284001374 - RP with NOVA STS	1
41	Grant	Sweetser	GR37-375, Replace 3-140 V4L with NOVA STS	1
42	Albany	Albany	RA10-367, Replace 3-100 V4H with NOVA STS	1
43	Daleville	East	DE83-175, Replace 3-200 V4L with NOVA STS	1
44	Daleville	East	DE93-110, Replace 3-140 V4L with NOVA STS	1
45	Albany	Albany	DE30D2-6, Replace 3-200 V4L with NOVA STS	1
46	Hummel Creek	West	GR16-124, Replace 3-280 V4L with NOVA STS	1
47	Jay	Redkey	JA68B3-12, Replace 3-280 V4L with NOVA STS	1
48	Jay	Redkey	JA69-27, Replace 3-200 V4L with NOVA STS	1
49	Jay	Redkey	JA69-63, Replace 3-140 V4L with NOVA STS	1

50	Mayfield	Selma	DE69C4-195, Replace 3-140 V4L with NOVA STS	1
51	Mayfield	Selma	DE69D1-82, Replace 3-140 V4L with NOVA STS	1
52	Mayfield	Waterworks	DE77C3-175, Replace 3-280 V4L with NOVA STS	1
53	Montpelier	Roll	BL4-274, Replace Existing with NOVA STS	1
54	Selma Parker	Parker	RA34-20, Replace 3-140 V4L with NOVA STS	1
55	Twenty-First Street	Cowan	DE86-288, Replace 3-200 V4L with NOVA STS	1
56	Wabash Ave.	South	BL30-17, Replace 3-200 V4L with NOVA STS	1
57	Wes Del	Dice Acres	DE55C3-219, Replace 3-200 V4L with NOVA STS	1
58	Wes Del	Harrison	DE33-75, Replace 3-140 V4L with NOVA STS	1
59	Wes Del	Harrison	DE43-87, Replace 3-140 V4L with NOVA STS	1
60	Winchester	Saratoga	RA5-165, Replace 3-200 V4L with NOVA STS	1
61	Gaston	Wheeling Pike	DE0016000181- RP With NOVA STS	1
62	Montpelier	Roll	BL0001000031- RP With NOVA STS	1
63	Rosehill	Rosehill	MA68-314- RP With NOVA STS	1
64	Hummel Creek	West	GR0027C10035- RP with NOVA STS	1
65	Selma Parker	Wapahani	DE0089000027-RP with NOVA STS	1
66	Selma Parker	Wapahani	DE0089000141-RP with NOVA STS	1
67	Grant	Sweetser	GR0038C10168-RP with NOVA STS	1
68	Albany	Albany	RA0001A10002 Replace 3-140 V4L Recloser with DA NOVA STS	1
69	Utica	Ross	DE0076A40101-RP with NOVA STS	1
70	Marquette	Springville	LP0232000094 -RP with NOVA STS	1
71	Marquette	Springville	LP0209000056 -RP with NOVA STS	1
72	South Side	Wildcat	JO0305000207 -RP with NOVA STS	1
73	South Side	Wildcat	JO0284001457 -RP with NOVA STS	1
74	East Side	Ironwood	JO0284000386 -RP with NOVA STS	1
75	West Side	No 5	JO0256000012 -RP with NOVA STS	1
76	West Side	No 5	JO0256001522 -RP with NOVA STS	1
77	West Side	No 5	JO0256000440 -RP with NOVA STS	1
78	Twin Branch	#3 - 12 Kv	JO0332000257-RP with NOVA STS	1
79	Darden Road	East 12 Kv	JO0187000732-RP with NOVA STS	1
80	Drewrys	Wilber 12 Kv	JO0210000392-RP with NOVA STS	1
			Total	79
			Estimated Labor Cost	$237,748
			Estimated Material Cost	$4,517,211
			Estimated Total Capital	$4,754,959

Smart Recloser Replacement 2022

Map Reference Number	Station	Circuit	Description	Units
1	Muldoon Mill	Hoagland	AL0742000073 - Install NOVA STS for SCT	1
2	Muldoon Mill	Hoagland	AL0715000054 - Install NOVA STS for SCT	1
3	Noble	Avilla	NO0362000079- Install NOVA STS for SCT	1
4	North Kendallville	Village	NO0217000488- Install NOVA STS for SCT	1

5	Tri Lakes	Shriner	WH0142000343- Install NOVA STS for SCT	1
6	Kingsland	Tocsin	WE0193000046- Install NOVA STS for SCT	1
7	South Berne	Geneva	AD0440000004- Install NOVA STS for SCT	1
8	South Berne	Yager	AD0384000091- Install NOVA STS for SCT	1
9	Saturn	Laud	WH0358000002- Install NOVA STS for SCT	1
10	Waynedale	Covington	AL0532000515- Install NOVA STS for SCT	1
11	Darden Road	Douglas 12 Kv	JO0212000068 Install NOVA STS	1
12	Dunlap	River Manor 12 Kv	EL0277000193 Install NOVA STS	1
13	Granger	#1 - 12 Kv	JO0146000003 Install NOVA STS	1
14	Granger	#1 - 12 Kv	JO0146000079 Install NOVA STS	1
15	South Bend	#3 - 12 Kv	JO0214000020 Install NOVA STS	1
16	Oliver	West	JO0175000134 - Install NOVA STS for SCT	1
17	Oliver	West	JO0175000133 - Install NOVA STS for SCT	1
18	Silver Lake	Wirekraft	JO0245000022 - Install NOVA STS for SCT	1
19	Silver Lake	Wirekraft	LP0238000021 - Install NOVA STS for SCT	1
20	Concord	#6 - 12 Kv	EL0250000075 Install NOVA STS	1
21	Bethel	Village	DE0065C40440 Replace 3-140 V4L Recloser with DA NOVA STS	1
22	Bosman	Eaton	DE0017A40015 Replace 3-200 V4L Recloser with DA NOVA STS	1
23	Fairmount	West Eighth St.	GR0094000032 Replace 3-140 V4L Recloser with DA NOVA STS	1
24	Fairmount	West Eighth St.	GR0094C10041 Replace 3-140 V4L Recloser with DA NOVA STS	1
25	Hartford City	Central	BL0024B40006 Replace 3-200 V4L Recloser with DA NOVA STS	1
26	Haymond	Jefferson	DE0056D20004 Replace 3-200 V4L Recloser with DA NOVA STS	1
27	Hogan	Cammack	DE0053D20080 Replace 3-140 V4L Recloser with DA NOVA STS	1
28	Jay	Redkey	JA0081A40028 Replace 3-140 V4L Recloser with DA NOVA STS	1
29	Lynn	Lynn	RA0096B40132 Replace 3-200 V4L Recloser with DA NOVA STS	1
30	Madison	Madison	MA0080A40035 Replace 3-140 V4L Recloser with DA NOVA STS	1
31	Madison	Madison	MA0080A40173 Recloser 3-100 V4L Recloser with DA NOVA STS	1
32	Marion	East	GR0039C30220 Replace 3-280 V4L Recloser with DA NOVA STS	1
33	Marion	East	GR0039C40037 Replace 3-140 V4L Recloser with DA NOVA STS	1
34	Portland	Commerical	JA0050D10122 Replace 3-200 V4L Recloser with DA NOVA STS	1
35	Portland	East	JA0051B10022 Replace 3-200 V4L Recloser with DA NOVA STS	1
36	Portland	Sheller	JA0061C10010 Replace 3-200 V4L Recloser with DA NOVA STS	1
37	Portland	Sheller	JA0061C10018 Replace 3-200 V4L Recloser with DA NOVA STS	1
38	Randolph	Chestnut	RA0055000054 Replace 3-140 V4L Recloser with DA NOVA STS	1

39	Randolph	Jackson	RA0044D10038 Replace 3-140 V4L Recloser with DA NOVA STS	1
40	Upland	South	GR0076D20147 Replace 3-140 V4L Recloser with DA NOVA STS	1
41	Aladdin	Fairview	MA0029D40037 Replace 3-280 V4L Recloser with DA NOVA STS	1
42	Aladdin	Fairview	MA0030B30291 Replace 3-140 V4L Recloser with DA NOVA STS	1
43	Aladdin	Yule	MA0046000151 Replace 3-200 V4L Recloser with DA NOVA STS	1
44	Albany	Albany	DE0030B30005 Replace 3-140 V4L Recloser with DA NOVA STS	1
45	Winchester	Fountain Park	RA0062000007- Install NOVA STS	1
46	Blaine	Luick	DE0077A40082 Replace 3-200 V4L Recloser with DA NOVA STS	1
47	Fairmount	Fowlerton	GR0109A30044- Install NOVA STS for SCT	1
48	Daleville	Daleville	DE0082000291- Install NOVA STS	1
49	Daleville	Daleville	DE0082B30022- Install NOVA STS	1
50	Daleville	Yorktown	DE0073C10546- Install NOVA STS	1
51	Gas City	Jonesboro	GR0073A10082- Install NOVA STS	1
52	Gas City	Jonesboro	GR0073A10174- Install NOVA STS	1
53	Miller Avenue	South	GR0038B30048- Install NOVA STS	1
54	Modoc	Modoc	RA0102000080- Install NOVA STS	1
55	Montpeiler	East	BL0005000036- Install NOVA STS	1
56	Peacock	Summitville	MA0014000014- Install NOVA STS	1
57	Peacock	Summitville	MA0014000296- Install NOVA STS	1
58	South Elwood	Country Club	MA0033A30056- Install NOVA STS	1
59	West End	East	GR0038C30260- Install NOVA STS	1
			Total	59
			Estimated Labor Cost	$180,044
			Estimated Material Cost	$3,420,838
			Estimated Total Capital	$3,600,883

Smart Circuit Ties 2021				
Map Reference Number	Station	Circuit	Description	Miles
1	Clipper	Garrett	Reconductor 2.3 Miles of 556 Al from DK0417000051 to NO0502000133	2.3
2	Woods Road	North	Replace 4/0 AA with 556 AL from AL0162000073 to NO0502000133	3.76
3	South Berne	Yager	Reconductor to 556AL from AD0384000091 to AD0371000031	2
4	Reed	Bohde	Reconductor to 556AL from AL0336001065 to AL03365001072	1
5	Robison Park	Dupont	Reconductor to 556AL from AL0306000085 to AL0336001066	1
6	Muldoon Mills	Hoagland	Reconductor to 556AL from AL0713000110 to AL0743000018	1.15

7	Harlan	Notestine	Reconductor to 556AL from AL0713000110 to AL0743000018	0.78
8	Kankakee	Sample	Reconductor 2 Cu & 2 AS to 556 AL from JO0255000416 to JO0256000347	0.93
9	Springville	Toll Rd	Reconductor 3/0 AS to 556 AL from LP0232000053 to LP0233000029	1.14
10	Marquette	Springville	Reconductor 3/0 AS to 556 AL from LP0233000029 to LP0233000037	1.17
11	Marquette	Springville	Reconductor 2 AA to 556 AL from LP0233000037 to LP0234000012	0.57
12	Olive	Industrial	Reconductor 2 AA to 556 AL from JO0201000151 to JO0178000069	0.99
13	Olive	Industrial	Reconductor 2 AA to 556 AL from JO0200000051 to JO0201000151	1.04
14	South Side	Wildcat	Reconductor 4/0 CU with 556 AL from JO0305001041 to JO0305000179	0.22
15	South Side	Wildcat	Reconductor 4/0 CU with 556 AL from JO0305000192 to JO0305000208	0.36
16	South Side	Wildcat	Reconductor 4/0 CU with 556 AL from JO0306000044 to JO0284000594	0.56
17	West Side	No 5	Reconductor 3/0 AS with 556 AL from JO0256000012 to JO0256000255	0.61
18	Montpelier	Roll	Reconductor and build 2 miles of 2 AA and 4 AS with 556 AL from BL1-13 to BL2-1	0.94
19	Gaston	Wheeling Pike	Build and/or rebuild 0.93 miles to 556AL from DE0016000002 to DE0016000359	0.93
20	Gaston	Wheeling Pike	Reconductor, build, and multiphase 1.55 miles of 2 AS, 2 AA, 4 AS, and 4 CU with 556 AL from DE16-181 to DE17B3-25	1.01
			Total	20.2
			Estimated Labor Cost	$4,072,981
			Estimated Material Cost	$3,469,577
			Estimated Total Capital	$7,542,558

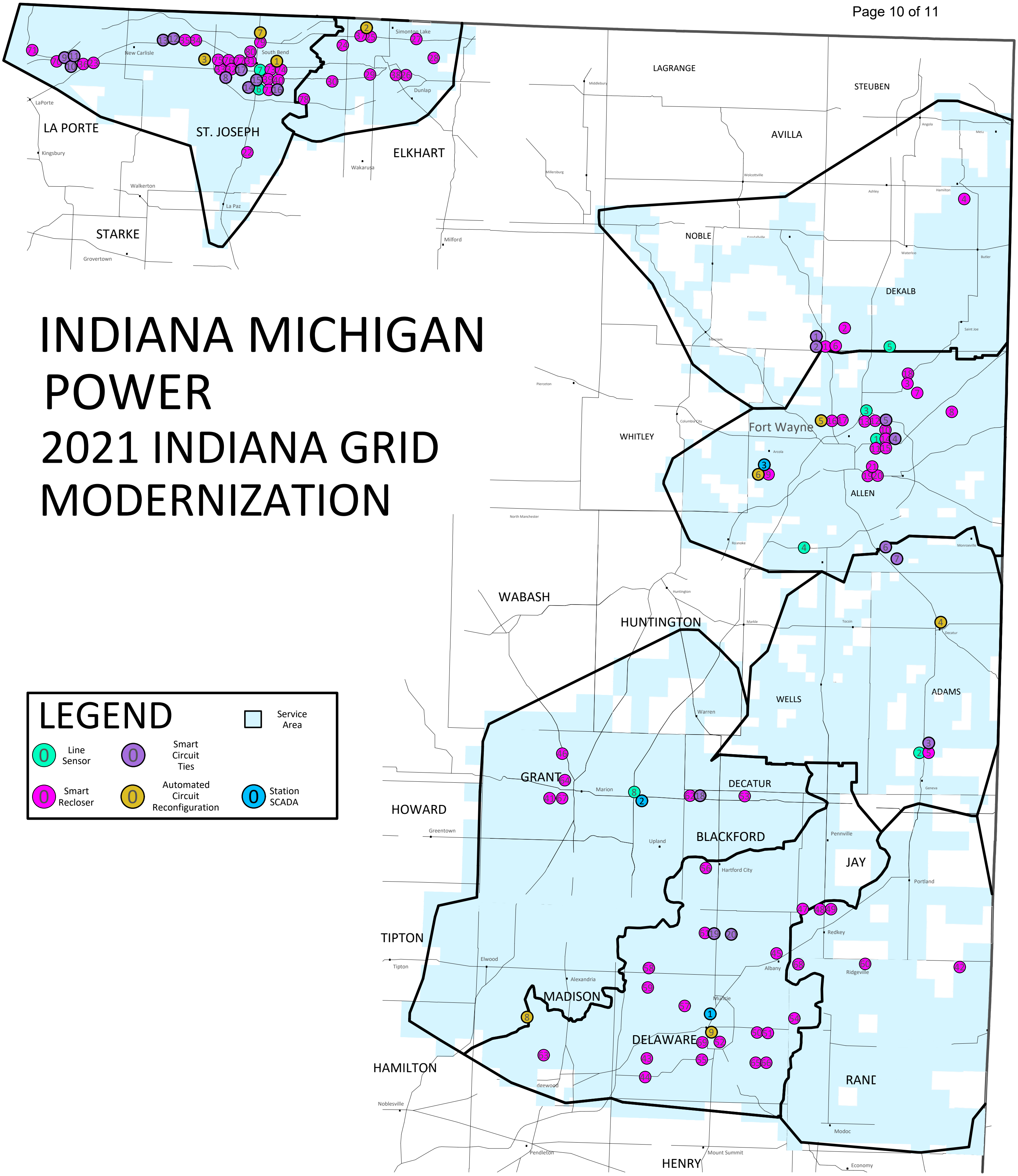
Smart Circuit Ties 2022				
Map Reference Number	Station	Circuit	Description	Miles
1	Muldoon Mill	Hoagland	Reconductor to 556AL from AL0713000110 to AL0743000018	3.87
2	Olive/Silver Lake	West/Wirekraft	Reconductor to 556 AL from JO0198000039 to JO0245000022.	2.61
3	Fairmount	Fowlerton	Build and/or reconductor 2AS to 556 from ALGR0107000036 to GR0109C20017	3.25
4	Grant	South	Reconductor 2CU to 556 AL from GR0048000188 to GR0048000218	1.6
5	Pipe Creek	Cole	Rebuild 2CU to 556AL from GR0057000201 to GR0048000218	3.5
			Total	14.8
			Estimated Labor Cost	$2,758,443
			Estimated Material Cost	$2,349,785
			Estimated Total Capital	$5,108,229

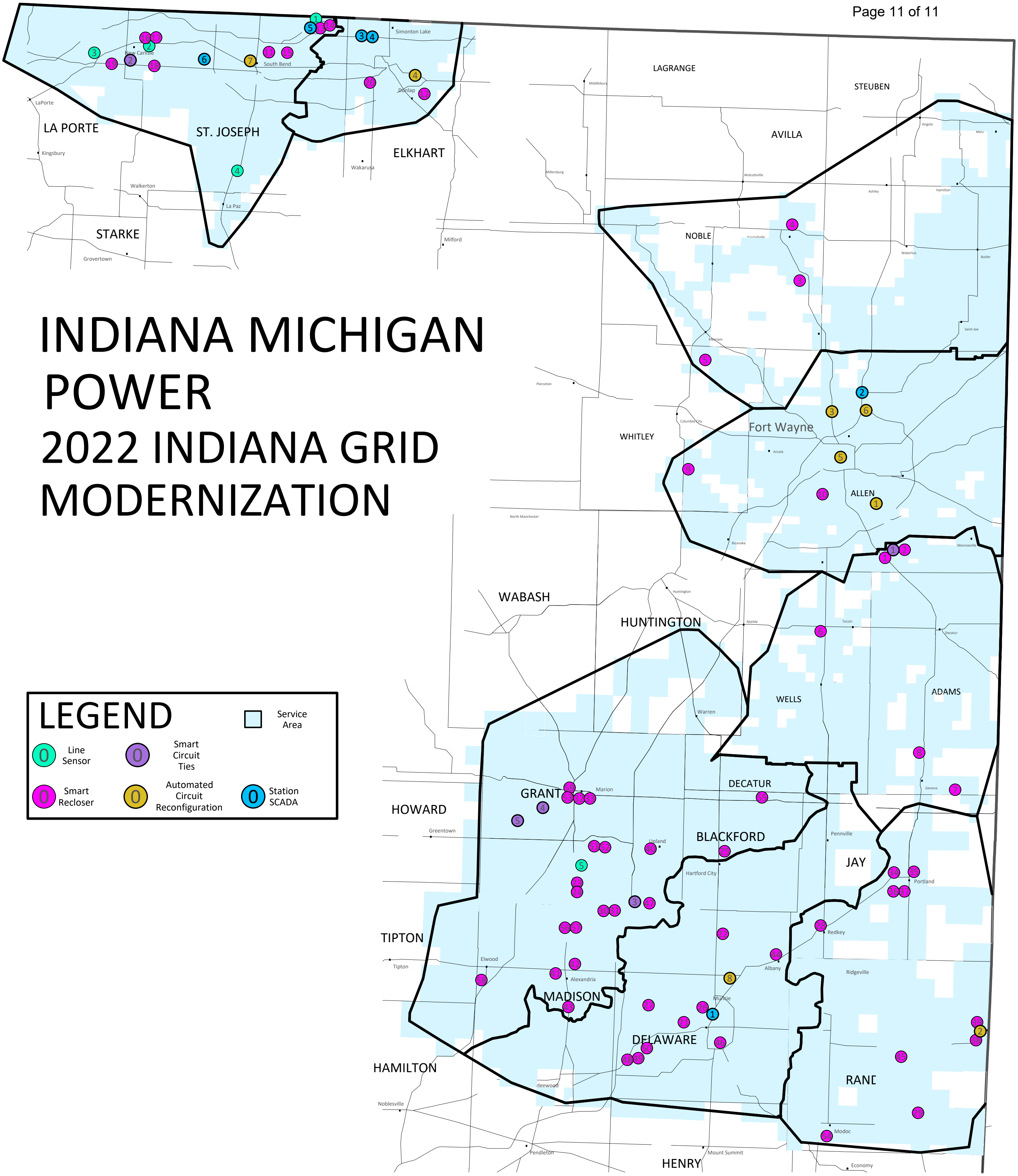
Distribution Automated Circuit Reconfiguration 2021				
Map Reference Number	Station	Circuit	Description	Circuits
1	East Side, South Bend	Hasting, Park Jeff, Wilson, No 3	Install new automatic transfer scheme	4
2	Cleveland, County Road 4, Granger	Park Forest, Garver Lake, Airport, No.1	Install new automatic transfer scheme	4
3	Lydick, Pine Road	Ardmore, South	Install new automatic transfer scheme	2
4	Decatur, Magley	Root, Preble	Install new automatic transfer scheme	2
5	Summit, Hadley	Chalfant, Flaugh	Install new automatic transfer scheme	2
6	Illnois Road, Hadley, Colony Bay	Scott, Arcola, Inverness	Install new automatic transfer scheme	3
7	Darden, German	Auten Road, Lilac, No.5, No.2	Install new automatic transfer scheme	4
8	Linwood, Rosehill	Linwood, Rosehill	Install new automatic transfer scheme	2
9	Blaine Street, Mayfield, Haymond	Luick Ave, North, Grant Street, Waterworks, Springwater, Whitely	Install new automatic transfer scheme	6
			Total	29
			Estimated Labor Cost	$1,601,198
			Estimated Material Cost	$2,973,654
			Estimated Total Capital	$4,574,852

Distribution Automated Circuit Reconfiguration 2022				
Map Reference Number	Station	Circuit	Description	Circuits
1	Wayne Trace, Lincoln	Meyer, Hartzell	Install new automatic transfer scheme	2
2	Randolph	Chestnut, Industrial, Jackson Pike, Commercial	Install new automatic transfer scheme	4
3	Wallen, Robison Park	Honeywell, Cook, Auburn Road	Install new automatic transfer scheme	3
4	Elcona, Dunlap	Country Club, River Manor	Install new automatic transfer scheme	2
5	Spy Run, Industrial Park, Summit	Goshen, Park Wells, Summit, Ludwig	Install new automatic transfer scheme	4
6	Robison Park, Grabill	Mallard, Page	Install new automatic transfer scheme	2
7	Drewrys, West Side	Brookfield, No.6, Diamond	Install new automatic transfer scheme	3
8	Royerton, McGalliard, Haymond	Riggin, Morningside, Jefferson	Install new automatic transfer scheme	3
			Total	23
			Estimated Labor Cost	$1,329,468
			Estimated Material Cost	$2,469,013
			Estimated Total Capital	$3,798,481

Station SCADA 2021			
Map Reference Number	Station	Description	Units
1	McGalliard Road	Install station SCADA	1
2	Dooville	Install station SCADA for DACR	1
3	Illinois Road	Install station SCADA for DACR	1
		Total	3
		Estimated Labor Cost	$1,403,058
		Estimated Material Cost	$2,104,588
		Estimated Total Capital	$3,507,646

Station SCADA 2022			
Map Reference Number	Station	Description	Units
1	Pennville	Install station SCADA	1
2	Diebold Road	Install station SCADA for DACR	1
3	Cleveland	Install station SCADA for DACR	1
4	County Road 4	Install station SCADA for DACR	1
5	Granger	Install station SCADA for DACR	1
6	Lydick	Install station SCADA for DACR	1
		Total	6
		Estimated Labor Cost	$3,053,548
		Estimated Material Cost	$4,580,322
		Estimated Total Capital	$7,633,869


INDIANA MICHIGAN POWER
2021 INDIANA GRID MODERNIZATION
LEGEND
Service Area
Line Sensor
Smart Circuit Ties
Smart Recloser
Automated Circuit Reconfiguration
Station SCADA
LA PORTE
ST. JOSEPH
ELKHART
STARKE
LAGRANGE
STEUBEN
AVILLA
NOBLE
DEKALB
WHITLEY
Fort Wayne
ALLEN
WABASH
HUNTINGTON
WELLS
ADAMS
GRANT
DECATUR
HOWARD
BLACKFORD
JAY
TIPTON
MADISON
DELAWARE
HAMILTON
HENRY
RAND


INDIANA MICHIGAN POWER
2022 INDIANA GRID MODERNIZATION
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GRANT
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JAY
TIPTON
MADISON
DELAWARE
HAMILTON
RAND
HENRY
South Bend
New Carlisle
Simonton Lake
LaPorte
Kingsbury
Walkerton
La Paz
Wakarusa
Grovertown
Milford
Marion
Greentown
Upland
Hartford City
Pennville
Portland
Redkey
Albany
Ridgeville
Muncie
Elwood
Tipton
Alexandria
Noblesville
Pendleton
Mount Summit
Modoc
Economy
Geneva
Decatur
Warren
Markle
Huntington
North Manchester
Pierceton
Columbia City
Arcola
Roanoke
Monroeville

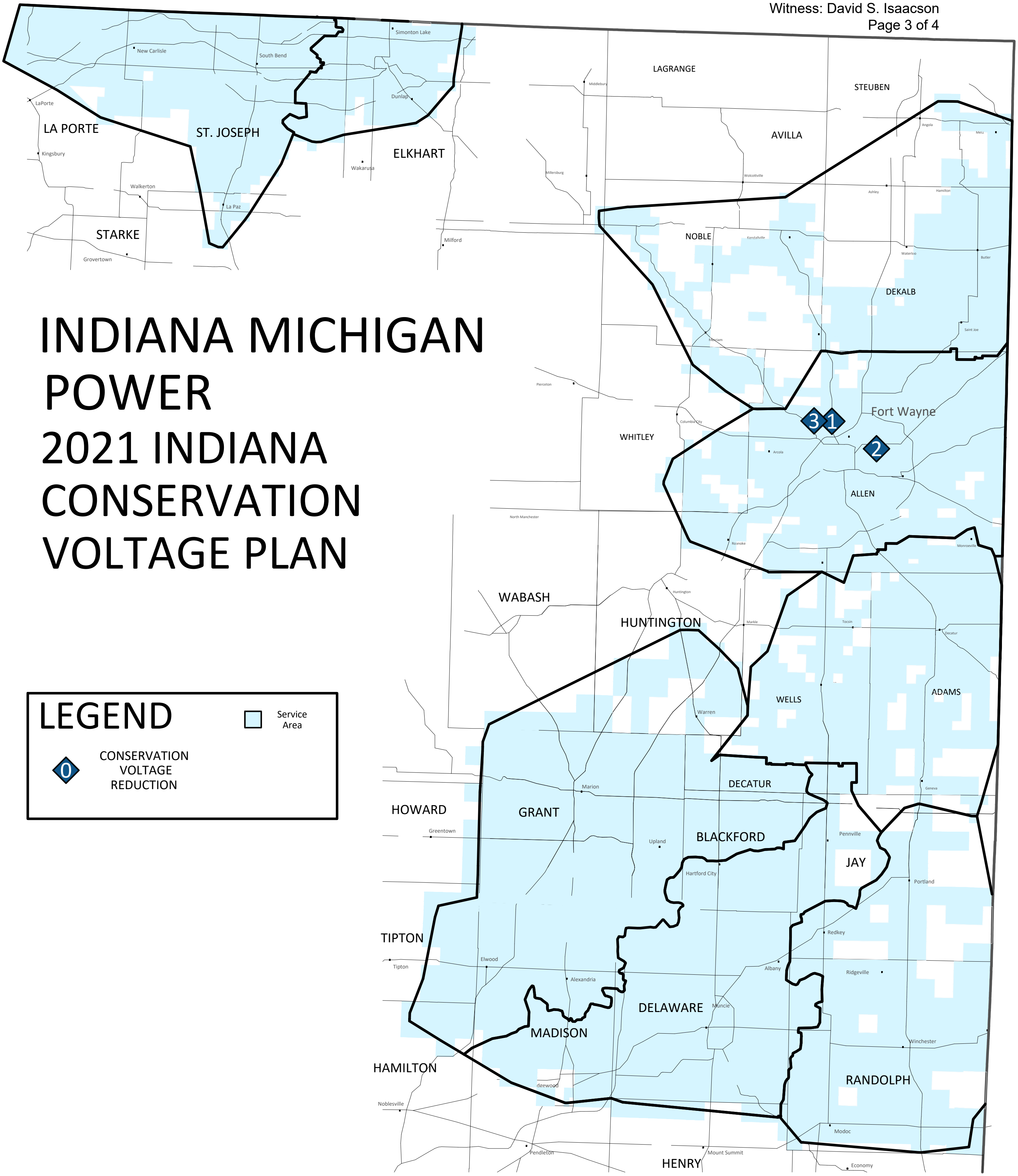
Indiana Michigan Power - Indiana CVR Management Plan

Note that estimates are Class 3 estimates

Conservation Voltage Reduction (CVR) 2021				
Map Reference Number	Station	Circuit	Description	Number of Circuits
1	Wallen	Cook, Fritz, Honeywell, Irene Byron, Pine Valley, Windsor	Install CVR Scheme	6
2	Trier	Buckingham, Walden, West	Install CVR Scheme	3
3	Summit	Chalfant, Huguenard, Innovation, Ludwig, Salomon	Install CVR Scheme	5
			Total	14
			Estimated Labor Cost	$528,897
			Estimated Material Cost	$2,115,588
			Estimated Total Capital	$2,644,485

Conservation Voltage Reduction (CVR) 2022				
Map Reference Number	Station	Circuit	Description	Number of Circuits
1	Robison Park	Concordia, Mayhew, Dupont, Plaza, Auburn Road, Mallard	Install CVR Scheme	6
2	County Road 4	Simonton Lake, Garver Lake, Airport	Install CVR Scheme	3
3	Jay	Redkey, Millgrove	Install CVR Scheme	2
4	Lusher Avenue	Hart, Warrior, Wolf Ave	Install CVR Scheme	3
5	Drewrys	Portage, Diamond, Brookfield, Wilber	Install CVR Scheme	4
6	Blaine Street	Luick Ave, Grant Street, North, Heekin Park,	Install CVR Scheme	4
7	Illinois Road	Covington, Scott, Chesnut	Install CVR Scheme	3
8	Mackey	Miles, Cap, General, Music, Charger	Install CVR Scheme	5
9	Colfax	No.1, No.2, No.3	Install CVR Scheme	3
10	Berne	Parr, Harrison, Swiss	Install CVR Scheme	3
11	Fisher Body	No. 1	Install CVR Scheme	1
12	Monroe	Monroe	Install CVR Scheme	1
13	Decatur	Business, Residential, West End, Krick, Root, Union	Install CVR Scheme	5
14	Granger	No.1, No.2, No.3, No.4, No.5, No.6	Install CVR Scheme	6

15	Hillcrest	Southtown #1, Southtown #2, Dunbar, Ventura, Warfield	Install CVR Scheme	5
16	Mayfield	Selma, Waterworks, Springwater	Install CVR Scheme	3
17	Colony Bay	Colony, Dicke, Inverness, Getz, Medical, Copper Hill	Install CVR Scheme	6
18	Dunlap	No.1, No.2, No.3, No.4	Install CVR Scheme	6
19	Cleveland	Park Forest, Memorial, Discovery	Install CVR Scheme	3
20	Rosehill	Rosehill	Install CVR Scheme	1
21	Beech Road	Dunn, Mckinley, Bittersweet	Install CVR Scheme	3
			Total	76
			Estimated Labor Cost	$4,493,469
			Estimated Material Cost	$17,973,877
			Estimated Total Capital	$22,467,346


INDIANA MICHIGAN POWER
2021 INDIANA CONSERVATION VOLTAGE PLAN
LEGEND
Service Area
CONSERVATION VOLTAGE REDUCTION
LA PORTE
ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
STARKE
NOBLE
AVILLA
DEKALB
WHITLEY
Fort Wayne
ALLEN
WABASH
HUNTINGTON
WELLS
ADAMS
HOWARD
GRANT
DECATUR
BLACKFORD
JAY
TIPTON
DELAWARE
MADISON
HAMILTON
RANDOLPH
HENRY
South Bend
New Carlisle
Simonton Lake
Dunlap
LaPorte
Kingsbury
Wakarusa
Walkerton
La Paz
Grovertown
Milford
Marion
Upland
Hartford City
Greentown
Elwood
Alexandria
Albany
Muncie
Tipton
Noblesville
Pendleton
Mount Summit
Modoc
Economy
Winchester
Ridgeville
Redkey
Portland
Pennville
Geneva
Warren
Huntington
Markle
Tocsin
Decatur
Monroeville
Roanoke
Arcola
Columbia City
North Manchester
Pierceton
Angola
Ashley
Hamilton
Waterloo
Butler
Saint Joe
Kendallville
Wolcottville
Middlebury
Millersburg
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INDIANA MICHIGAN POWER 2022 INDIANA CONSERVATION VOLTAGE PLAN