COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power	)	
Company For A Certificate Of Public Convenience	)	
And Necessity To Perform Upgrade, Replacement,	)	Case No. 2019-00154
And Installation Work At Its Existing Substation	)	
Facilities In Perry And Leslie Counties, Kentucky	)	

DIRECT TESTIMONY OF

MICHAEL G. LASSLO

ON BEHALF OF KENTUCKY POWER COMPANY

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I. INTRODUCTION

Q: PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A: My name is Michael G. Lasslo. My position is Reliability Manager for Kentucky Power Company. My business address is 1400 E. Main Street, Hazard, Kentucky.

II. BACKGROUND

Q: PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A: I have a Bachelor of Science Degree in Electrical Engineering from the University of Kentucky. I have 41 years of experience with Kentucky Power Company. My work experience includes: engineering and design for new and upgraded electrical service to residential, commercial, and industrial customers; preparation of detailed studies to evaluate the existing distribution infrastructure and to plan for future system improvements; transmission/sub-transmission construction, operation and maintenance; substation construction, operation, and maintenance; power quality studies and customer complaint resolution; budgeting for capital, operation and maintenance expenditures; implementation and monitoring of safety programs and performance, accident/incident investigation; marketing of electro-technologies; customer service; and various supervisory and management positions.

Q: WHAT ARE YOUR RESPONSIBILITIES AS RELIABILITY MANAGER FOR KENTUCKY POWER COMPANY?

A: My role is to lead the activities of the Kentucky Power Reliability Team to provide safe, efficient, and reliable electric service to over 165,000 residential, commercial and industrial customers. I manage talented professionals who are organized into the functions of distribution engineering; project management; risk management; customer service; and power quality. My responsibilities include: customer service; restoration of service interruptions (including major storms); provision of new and upgraded service to distribution customers from 120V single phase through 34.5 kV three phase; provision of new and upgraded service to transmission customers from 46kV through 138kV; evaluation of employee performance, monitoring of work practices for compliance with codes of conduct, safety rules and procedures, and environmental regulations; public safety; budgeting and expenditures; working with various state and local agencies to promote economic development of the service area; and developing and maintaining good working relationships with local and state elected officials, community leaders, civic groups, and the media.

I also provide input regarding the planning activities of the AEP transmission and distribution assets planning groups regarding overall system performance; recommendation and evaluation of large system improvements; and new service to large commercial and industrial customers.

Q: HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A: Yes. I filed written testimony in multiple cases in which Kentucky Power sought a certificate of public convenience and necessity to construct transmission-related facilities. These include Case Nos. 2011-00295,[1] 2018-00072,[2] and 2018-00209.[3] I also filed testimony in Case No. 2017-00328[4] in which the Commission granted the Company's application in part to construct the Hazard-Wooton 161 kV transmission line and certain baseline elements associated with the line. The Commission denied without prejudice the remainder of the Company's application seeking authority to construct, replace, and upgrade elements at Kentucky Power's existing Hazard 161/138/69 kV Substation ("Hazard Substation") and Wooton 161 kV Substation ("Wooton Substation"). Much of that same work is the subject of Kentucky Power's Application in this proceeding.

III. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I first provide a general background regarding substations. I next address the reliability benefits to be provided by the proposed improvements to the Hazard Substation and the Wooton Substation. Finally, I describe the need to coordinate work at the two substations

[1] *In the Matter of: The Application Of Kentucky Power Company For A Certificate Of Public Convenience And Necessity To Construct A 138 KV Transmission Line In and Associated Facilities in Breathitt, Knott and Perry Counties, Kentucky (Bonnyman-Soft Shell Line).*

[2] *In the Matter of: Electronic Application Of Kentucky Power Company For A Certificate Of Public Convenience And Necessity To Construct A 138 kV Transmission Line In Boyd County, Kentucky (EastPark 138 kV Transmission Line (Phase 1)).*

[3] *In the Matter of: Electronic Application Of Kentucky Power Company For A Certificate Of Public Convenience And Necessity To Construct A 138 kV Transmission Line And Associated Facilities In Pike And Floyd Counties (Enterprise Park Economic and Area Improvements Project).*

[4] *In the Matter of: Electronic Application Of Kentucky Power Company For Certification of Public Convenience and Necessity to Construct A 161 kV Transmission Line in Perry and Leslie Counties, Kentucky, and Associated Facilities.*

to limit outages and to avoid the unnecessary expense required by multiple mobilizations to perform substation work.

IV. BACKGROUND ON SUBSTATIONS

Q. PEASE DESCRIBE THE FUNCTION OF SUBSTATIONS GENERALLY.

A. A substation generally transforms voltage from one voltage to another. Substations are typically classified by their primary purpose as either a transmission substation or a distribution substation.

Q. PLEASE DESCRIBE THE MAJOR COMPONENTS OF A SUBSTATION.

A. Substations such as the Hazard Substation and the Wooton Substation consist of multiple types of electrical equipment that perform different functions. The equipment found in a typical substation and the principal functions performed by the equipment include:

(a) <u>Transformers</u> – transformers are used to step-down the voltage from transmission to sub-transmission and distribution levels. The typical transmission substation may have one or more transformers depending on the number of transmission and distribution circuits passing through or being served from the substation.

(b) <u>Circuit breakers</u> – circuit breakers provide protection and control functions at the transmission, sub transmission, or distribution levels. Circuit breakers open to interrupt power flow to de-energize an electrical circuit. Their operation can be automatic in the event of a fault on the system, or they can be operated manually to de-energize the circuit in preparation for maintenance of the electrical circuit or the breaker itself. They also close to energize an electrical circuit. Depending on the design of the control scheme, a breaker may open or close one or more times during a fault event depending on the location of the fault.

(c) Busses – the bus is a structure that consists of electrical conductors and insulators that serves as a common connection point between various components such as transformers, breakers, and capacitor banks. There can be several busses contained in a substation that operate at different voltage levels.

(d) Relays – a relay is a device that provides protection, control, and/or monitoring functions, and can send (i.e. relay) a signal to operate other equipment such as circuit breakers or to activate alarms. Relays can monitor and operate based on multiple parameters that are selected by the protection and control engineers. These parameters include but are not limited to: overcurrent; over or under voltage; over or under frequency; temperature; pressure; equipment operational status or position; instantaneous or peak current, voltage and loading levels; and remote supervisory control.

(e) Capacitor banks – on the transmission or sub-transmission system, the primary function of capacitor banks is to control the voltage level. Throughout a typical day the amount of electrical load on the grid will vary and therefore the voltage will vary. Closing in, or connecting, a capacitor bank to the system will increase the voltage level; conversely, opening, or disconnecting, a capacitor bank from the system will decrease the voltage level. On the distribution system, the primary function of capacitor banks is to correct for lagging power factor caused by inductive loads such as motors, but they may also be used for voltage control.

(f) Communications equipment – permits remote monitoring and operation of substation equipment through the supervisory control and data acquisition (SCADA) system. It also serves to transmit relay and control signals between substations for system protection and control.

(g) Surge Arrestors – provide overvoltage protection to transmission, sub-transmission, and distribution lines, as well as substation components. Overvoltage events usually are due to lightning but can also occur during switching operations or faults.

V. SYSTEM RELIABILITY

Q. WHICH OF THE COMPONENTS YOU DESCRIBE PLAY A ROLE IN MAINTAINING SYSTEM RELIABILITY?

A. The relays, circuit breakers, arrestors, and communications equipment are most important substation components for maintaining system reliability. When a fault, overload, or system abnormality occurs, these components function together as a system to interrupt power flow to the faulted or overloaded equipment (either on a transmission, sub transmission, or distribution line, or on a substation component).

Q. HOW DO THESE COMPONENTS FUNCTION TO MAINTAIN RELIABILITY?

A. The reliability protection system is designed to limit damage to the electrical equipment, provide safety to employees and the public, and to minimize the disruption to the electric grid. The faulted or overloaded equipment will be sectionalized (disconnected from the grid) to protect the rest of the system and to maintain service to as many of our customers as possible.

Q. DO THESE COMPONENTS ENSURE THAT SERVICE IS ALWAYS MAINTAINED?

A. Service may be lost in the course of protecting the public, including customers, employees, and equipment. For example, if a distribution transformer fails, the protection and control system will operate to isolate and remove the transformer from service, but customers that are served from that transformer will lose service. If a transmission transformer fails, depending on system conditions (such as during peak loading) there could be risk of overloading other segments or components of the area transmission system which in turn could jeopardize service to more customers.

If a fault occurs on a substation bus, the bus will be de-energized and isolated, but because the bus functions to connect various lines and transformers, that connection will be lost. In turn, this will segment the electric grid and may result in loss of service to customers in the event of the loss of another segment of the grid.

Q. CAN THE AGE OF SUBSTATION EQUIPMENT AFFECT THE EQUIPMENT'S PERFORMANCE AND THE RESULTING RELIABILITY OF CIRCUITS SERVED BY THE SUBSTATION?

A. Most certainly. Like any type of complex equipment, substation equipment is subject to degradation of performance and decreased reliability over time. Transformers have a life expectancy of approximately 60 years; the life expectancy of a typical circuit breaker is approximately 50 years.

Q. ARE THERE FACTORS OTHER THAN AGE THAT CAN AFFECT THE RELIABILITY OF SUBSTATION EQUIPMENT?

A. Yes. Fault operations create temperature and mechanical stresses on the substation equipment and its components leading to the degradation of the equipment. Faults on the electrical lines or substation busses cause significant mechanical and thermal stresses within the windings of the substation transformers that can damage the transformers' internal insulation. For circuit breakers, the equipment manufacturers typically recommend that after a specified number of fault operations the affected circuit breaker be removed from service, inspected, and internal components be replaced if necessary.

Q. WHAT OTHER FACTORS CAN AFFECT THE RELIABILITY OF SUBSTATION EQUIPMENT?

A. Equipment suppliers may cease manufacturing or supporting equipment types or models after a certain period, just as with any consumer product. As manufacturers discontinue support, the equipment becomes obsolete and spare parts become difficult or impossible to obtain. An example of this obsolescence, and as further supported by Company witness Ali, is electromechanical relays, which are no longer manufactured or supported and thus replacements can be difficult to obtain.

Q. IS SUBSTATION EQUIPMENT SUBJECT TO WEATHER-RELATED CORROSION, DEGRADATION, AND LEAKS?

A. Yes. Much of the equipment in a substation must be deployed outdoors and is exposed to the elements. This exposure can lead to corrosion and degradation of equipment housings, tanks, cabinets, bushings, and other components. This corrosion and degradation can affect the performance and reliability of the equipment. In addition, it can result in leaks and failures that have the potential to produce environmental and safety risks.

Q. CAN SUBSTATION RELIABILITY EVER BE IMPACTED BY EQUIPMENT DESIGN ISSUES?

A. Yes. As one of the largest owners of transmission equipment in the United States, the AEP operating companies deploy significant numbers of substation equipment components that are manufactured by a single manufacturer. The operating companies also can deploy significant numbers of same equipment model. That experience can lead to the conclusion that a particular model – although operating reasonably at the time in a Kentucky Power substation – presents an undue risk of failure or mis-operation.

VI. THE HAZARD SUBSTATION AND THE WOOTON SUBSTATION

Q. PLEASE DESCRIBE THE HAZARD SUBSTATION.

A. The Hazard Substation is located at 1400 East Main Street, Hazard, Kentucky. The area within the fence measures approximately two acres. It was constructed almost 80 years ago in the early 1940's. The substation's proximity to the North Fork of the Kentucky River, nearby development, and the topography of the area make expansion of the existing footprint impracticable. Six transmission circuits and three distribution circuits terminate at the substation. Approximately 1,800 customers and 30 MW of load are directly served by the three distribution circuits terminating at the Hazard Substation.

Q. WHAT EQUIPMENT COMPRISES THE HAZARD SUBSTATION?

A. The major components of the Hazard substation are:

- The galvanized steel towers and columns that support the conductors, insulators, bus work, and switches that form the 161kV, 138kV, 69kV, 34.5kV, and 12kV structures.
- The #1 138/69kV 50MVA transformer that is source-connected to the #1 138kV bus and is load-connected to the #1 69kV bus.
- The #2 138/69kV 130MVA transformer that is source-connected to the #2 138kV bus and is load-connected to the #2 69kV bus.

- The #3 161/138kV 135MVA transformer that is source-connected to the #2 138kV bus and is load-connected to the Hazard-Pineville 161kV transmission line feeding towards Wooton Substation.
- The #4 138/34.5kV 30MVA transformer that is source-connected to the #2 138kV bus and is load-connected to the 34.5kV distribution bus.
- The #5 34.5/12kV 3.75MVA transformer that is source-connected to the 34.5kV distribution bus and is load-connected to the 12kV distribution bus.
- The 161kV Circuit Breaker “M” that is connected to the 161kV side of the #3 161/138kV transformer and feeds the Hazard-Pineville 161kV transmission line towards Wooton Substation.
- The 138kV switch “Y” that is connected to the #1 138kV bus and feeds the Hazard-Beaver Creek transmission line towards Beckham Substation.
- The 138kV Circuit Breaker “N” that is connected between the #1 138kV bus and the #2 138kV bus.
- The 69kV Circuit Breaker “E’ that is connected to the #1 69kV bus and feeds the Hazard-Leslie 69kV line.
- The 69kV Circuit Breaker “F” that is connected to the #1 69kV bus and feeds the Hazard-Bonnyman #1 69kV line.
- The 69kV Circuit Breaker “R” that is connected to the #2 69kV bus and feeds the Hazard-Bonnyman #2 69kV line.
- The 69kV Circuit Breaker “S” that is connected to the #2 69kV bus and feeds the Hazard-Daisy 69kV line.

- The 34.5kV Circuit Breaker "A" that is connected to the 34.5kV distribution bus and feeds the Hazard-Kenmont 34.5kV distribution circuit.
- The 34.5kV Circuit Breaker "B" that is connected to the 34.5kV distribution bus and feeds the Hazard-Blackgold 34.5kV distribution circuit.
- The 12kV Circuit Breaker "C" that is connected to the 12kV distribution bus and feeds the Hazard-Hazard 12kV distribution circuit.
- The 12kV Circuit Breaker "D" that is connected to the 12kV distribution bus and serves as a spare.
- The 138kV Circuit Switcher "BB" that is connected to the #2 138kV bus and serves a 13.2MVAR 138kV capacitor bank.
- The 69kV Circuit Switcher "CC" that is connected to the #2 69kV bus and serves a 34.3MVAR 69kV capacitor bank.
- The control house that contains various controls, relays, stationary battery bank and communication equipment.

Q. HOW IS THE HAZARD SUBSTATION CONFIGURED?

A. **EXHIBIT MGL-1** provides a "one-line drawing" of the electrical layout of the Hazard Substation.

Q. PLEASE DESCRIBE THE WOOTON SUBSTATION.

A. The Wooton Substation was constructed in 2006, and is located on a one-half acre tract of land. The substation is located in northeastern Leslie County, Kentucky. Three transmission circuits terminate at the substation.

Q. WHAT EQUIPMENT COMPRISES THE WOOTON SUBSTATION?

A. The major components of the Wooton substation are:

- The 161kV Circuit Breaker "A" that feeds towards the Leslie Substation. This circuit breaker supports the Leslie-Wooton segment of the Hazard-Pineville 161kV transmission line.
- The 161kV Circuit Breaker "B" that feeds towards the Hazard Substation. This circuit breaker supports the Hazard-Leslie segment of the Hazard-Pineville 161kV line.
- The 161kV Circuit Breaker "C" that feeds towards the LG&E/KU Arnold-Delvinta 161kV transmission line. This circuit breaker serves the interconnection between the Kentucky Power and LG&E/KU 161kV transmission grids, which in turn is an important source of power for the Hazard Area.
- The 161kV bus that serves to connect the three 161kV circuit breakers listed above.
- The control house that contains various controls, relays, stationary battery bank and communication equipment.

Q. PLEASE GENERALLY DESCRIBE FOR THE COMMISSION THE EQUIPMENT ISSUES EXISTING AT THE HAZARD SUBSTATION THAT WILL BE ADDRESSED THROUGH THE WORK DESCRIBED IN THE APPLICATION.

A. Company Witness Ali and **EXHIBIT 2** to the Application provide a more detailed explanation of the components to be installed at the two substations, their functions, and the need for each. Here I address the reliability-related need for certain aspects of the proposed work. From a reliability standpoint, the work to be performed at the Hazard Substation falls into four categories:

(1) Two of the transformers at the Hazard Substation are to be replaced to address dielectric breakdown of insulation, accessory damage to the bushings and windings, and short circuit breakdown.

(2) Multiple circuit breakers have exceeded their expected useful life. They are to be replaced because of fault operations well in excess of the manufacturers' recommendations leading to damage to circuit breaker components including bushings. Many of these circuit breakers are oil-type breakers, and present maintenance and environmental issues because of required oil-handling procedures and the risk of oil leaks. The oil in some of these older circuit breakers also may contain polychlorinated biphenyls (PCBs), increasing maintenance issues and environmental risk.

(3) One of the capacitor circuit switchers at the Hazard Substation is of the type being replaced across the AEP-system. MARK V units have a demonstrated history of excessive failures and mis-operations. Because of the widespread nature of these issues with the MARK V unit AEP operating companies are replacing MARK V units with a capacitor switcher that meets the latest AEP-system design standard when the opportunity presents itself.

(4) Certain of the other components to be replaced are suffering oil leaks that cannot be repaired or are non-standard design and thus pose maintenance issues.

Q. HOW DO THESE EQUIPMENT ISSUES AFFECT RELIABILITY?

A. Substation equipment approaching the end of its operational life, equipment of a type with a history of an elevated risk of failure or mis-operation, equipment with faults well in excess of the manufacturers' recommendations, and equipment with damaged or deteriorating components all pose a risk of failure or mis-operation. Although most utility customers are served from the distribution level, the loss of transmission and elements of the grid, such as the Company proposes to replace at the Hazard and Wooton Substations, can jeopardize continued service to the distribution grid and the Company's customers because the transmission and elements link generation and distribution. The new transformers, capacitor banks and circuit breakers the Company proposes to install at the Hazard Substation will address the on-going risk of equipment failures that will negatively impact electric service to customers in the Hazard area.

Q. ASIDE FROM REPLACING OLD AND OBSOLETE EQUIPMENT, HOW DOES THE RECONFIGURATION WORK AND THE EQUIPMENT ADDITIONS AT THE HAZARD AND WOOTON SUBSTATIONS PROVIDE RELIABILITY BENEFITS?

A. The addition of new circuit breakers, circuit switchers, and associated relay upgrades to the Hazard Substation will separate dissimilar transmission and zones of protection. The resulting zones of protection will better isolate faults or equipment failures to smaller segments of the grid and therefore will present less risk of loss of service to the distribution grid. These improvements will not only benefit distribution customers served directly from the Hazard Substation, but also distribution customers that are served from the transmission and lines that are connected to the Hazard Substation.

The relay work and communication upgrades at Wooton Substation will improve the reliability of operation of the three transmission lines that are connected to the Wooton Substation by ensuring that the components and associated circuit breakers will operate as intended during faults and to improve the coordination with remote ends of the three transmission lines. The upgrades are designed to minimize the disruption to the Hazard area transmission grid during a fault event by confining the effect of a fault to only that segment of the transmission grid that experienced the fault, while keeping other segments in service.

Q. WHY IS THE COMPANY PROPOSING TO REPLACE EQUIPMENT BEFORE IT FAILS?

A. Running equipment to failure presents multiple problems that ultimately adversely affect Kentucky Power's customers. First, there are the environmental remediation issues associated with the failure of oil-filled equipment. Environmental cleanup is very expensive and can even exceed the cost of the equipment itself. Second, equipment failures can directly result in outages to our customers or place customers at risk of loss of service due to segmentation of the grid. This is the case particularly during peak loading conditions. Third, emergency repairs or equipment replacements are very costly. Premium prices may be incurred for equipment and much of the labor will be at an overtime rate. Fourth, further delays may result as the Company attempts to source the needed parts (if even available) and procure contract or company labor. Also, these emergency efforts may disrupt other ongoing projects as resources are redirected to the emergency. Fifth, the company may be required to forgo other "holistic" benefits, such as creating multiple zones of protection, when failed equipment must be replaced under the exigencies of an emergency instead of as part of a comprehensive plan that limits cost and customer disruption. Finally, Equipment failure can lead to damage or degradation of other equipment.

Q. IS THE WORK YOU DESCRIBE ABOVE AND THAT IS PROPOSED FOR THE HAZARD AND WOOTON SUBSTATIONS NECESSARY AND PRUDENT?

A. Yes. Kentucky Power must perform the proposed work in order to provide adequate and reliable service. It is important to replace aging and obsolete infrastructure in a timely and planned manner, in advance of failure, to provide safe and reliable service to our customers in a cost-effective manner. Moreover, even the work that is not related to replacing existing equipment, such as the relay and communication work proposed at the Wooton Substation, will assist the Company in its meeting its obligation to provide reliable service.

VII. COORDINATION OF WORK

Q. WHY IS KENTUCKY POWER PROPOSING TO PERFORM THE WORK AT THE HAZARD AND WOOTON SUBSTATIONS AS PART OF A SINGLE PROJECT INSTEAD OF MULTIPLE, SMALLER PROJECTS?

A. Planning and performing the Hazard and Wooton work as single project is the most efficient way to execute this project from a time and cost perspective. For that reason, approval of all necessary components is paramount to deliver the safety and reliability benefits of this work to Kentucky Power customers in an efficient manner.

Performing the proposed work at the Hazard Substation as a single project allows the Company (and its customers) to avoid the unnecessary expense of multiple mobilizations. It also avoids the need for multiple maintenance outages, which while not customer outages, do require scheduling and planning to allow for appropriate contingencies to continue service to customers with equipment out of service.

Q. WHAT IS MOBILIZATION?

A. Mobilization involves the preparatory steps to beginning the actual upgrade and replacement work at a substation. It includes preparation of drawings, bid documents, solicitation and evaluation and granting of bids, evaluation and selection of contractors and subcontractors, contracting for material deliveries, and preparing the work site. Contractors must bring their employees, tools, vehicles, and construction equipment to the work site. Some construction equipment, such as heavy lift cranes and earth moving equipment are very expensive and require significant effort to transport and assemble at the construction site.

Mobilization and execution also include activities such as construction permits related to endangered species, roads, storm water that have to be renewed. Executing a project over a longer period can also have impacts that are more lasting on the public and nearby property owners due to continued construction activities and increased traffic. Additional expenses for equipment and staging areas are likely as well. In addition, if work cannot be planned and executed in a timely manner, environmental requirements such a limited windows for tree clearing due to endangered bat populations can introduce potentially significant delays that add to project cost.

Q. WHAT IS THE ANTICIPATED COST OF THE MOBILIZATION REQUIRED FOR THE PROPOSED WORK AT THE HAZARD AND WOOTON SUBSTATIONS?

A. For the planned work at the Hazard and Wooton stations, the Company estimates rough, order-of-magnitude, mobilization costs of a minimum of $50,000, with the potential for these costs to be as much as $250,000 or more. Performing this work over a longer period will certainly add to these costs when compared against executing the work as a single project.

Q. WOULD THESE COSTS BE INCURRED FOR EACH MOBILIZATION?

A. The work and attendant cost would vary based on the scope of the work to be accomplished in each mobilization, but the individual component steps in sequential mobilization would be similar and there likely would be substantial duplication of costs that could be avoided by performing the work as a single project as Kentucky Power proposes. For example, if the same heavy construction equipment is required (which would be needed for the large power transformers and excavation work for foundations) the Company will be required to pay two or more delivery charges if the work is performed as multiple projects instead of the single project Kentucky Power proposes. Similarly, separate projects can require cable trench excavations to install new control cables. It is more economical to open the trench one time and install all of the necessary control cable as part of a single project instead of requiring that Kentucky Power incur of the cost of opening the trench, installing the equipment, and refilling the trench on multiple occasions.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes.

VERIFICATION

The undersigned, Michael G. Lasslo, being duly sworn, deposes and says he is the Reliability Manager, Kentucky Power Company, that he has personal knowledge of the matters set forth in the foregoing testimony, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Michael G. Lasslo
MICHAEL G. LASSLO

COMMONWEALTH OF KENTUCKY)
) SS
COUNTY OF PERRY)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Michael G. Lasslo this the 26 day of June, 2019.

Notary Public

My Commission Expires:

APRIL 16, 2023 (SEAL)

NOTARY ID #621555

System Electrical Diagram (Existing)