Exhibit No. _____
Issues: Pre-Construction, Construction, and Post-Construction Process
Witness: Thomas F. Shiflett
Type: Direct Testimony
Sponsoring Party: Grain Belt Express Clean Line LLC
Case No.: EA-2016-____
Date Testimony Prepared: June 30, 2016

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EA-2016-____

DIRECT TESTIMONY OF

THOMAS F. SHIFLETT

ON BEHALF OF

GRAIN BELT EXPRESS CLEAN LINE LLC

June 30, 2016

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I. WITNESS INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name, present position and business address.

A. My name is Thomas F. Shiflett. I am the Executive Vice President, Electric Power Division for Quanta Services, Inc. ("Quanta"). My business address is 4770 N. Belleview Avenue, Suite 300 Kansas City, Missouri 64116-2188.

Q. Please describe your education and professional background.

A. I attended Southwest Missouri State University (Missouri State University) where I received my Bachelor of Science in Political Science and Psychology in 1975. I then attended the University of Central Missouri where I received my Master of Science in Industrial Safety in 1980.

Upon graduation from Central Missouri, I went to work at Iowa Power and Light ("MidAmerican Energy") in the position of Safety Specialist, reporting to the Corporate Safety Director. In this position I was responsible for promoting the general safety for all field forces of Electric Generation, Transmission and Distribution as well Natural Gas Transmission and Distribution, and the general public.

In 1983, I was promoted to the Position of Corporate Safety Director.

In 1985, I entered direct field operations by taking the position of Area Operations Supervisor, Colfax District. Then in 1988 I was promoted to the Position of Des Moines Service Center Manager with responsibility for operating and maintaining the Des Moines Electric System.

In 1991, I went to work for PAR Electrical Contractors Inc. ("PAR Electric") as their Northern Division Manager, headquartered in Des Moines, Iowa. I was responsible for all business in the upper Midwest and Western portions of the U.S. I estimated all work

coming into the office which entails breaking the project down into estimated labor and equipment hours, developing an associated bill of materials and preparing bidding and subcontract documents for any work not self- performed. This analysis was then used to develop our overall proposal and bid. On projects awarded I managed all work within the region, including engineering, procurement, and construction of numerous large electric transmission and distribution capital projects. Additionally, I was involved in emergency restoration work throughout the United States.

In 1997, PAR Electric expanded its operations to the West Coast, and I became the Vice President, Western Division, headquartered in San Diego, CA. Concurrent with this move was the formation of Quanta Services. With PAR Electric as its founding member, Quanta Services created an integrated, comprehensive nationwide network of infrastructure contractors to meet the evolving needs of electric utility, gas and pipeline companies. While each Company within the Quanta family retains its operating identity, it also has access to a host of resources Quanta provides including training, procurement, engineering and expanded equipment and labor resources.

During my tenure as PAR Electric's Vice President, Western Division, PAR Electric grew into the largest electrical contractor in the western states, performing many large transmission projects primarily for San Diego Gas and Electric, Southern California Edison, Pacific Gas and Electric, Nevada Power and Arizona Public Service. In 1999 I was promoted to COO of PAR Electric, and transferred to PAR Electric's corporate office in Kansas City, Missouri. During this period, through both organic growth and Quanta acquisitions, which were tucked into PAR Electric, PAR Electric become the largest electric utility infrastructure contractor in the United States. In 2003 I became President of PAR Electric. During my

tenure, PAR Electric has constructed the majority of major electric transmission projects to date in the United States. In 2013, I moved from PAR Electric to Quanta Services to take the position of Executive Vice President, Electric Power Division. A copy of my CV is attached as **Schedule TFS-1**.

Q. What are your duties and responsibilities as Executive Vice President, Electric Power Division for Quanta?

A. I initially had overall responsibility for all U.S. Electric Operating Companies for Quanta Services. These Companies included Allteck Construction, Computapole, Crux Subsurface, Inc, EHV Power, IRBY Construction, J.W. Didado, Longfellow Drilling, MJ Electric, PAR Electric, Probst Electric, Service Electric Company, Dillard Smith Company, Summit Line Construction, Sumter Utilities, Inc. Utilimap Corporation and Winco Powerline Services. These Companies employ over 6,000 craft professionals and work throughout the U.S. and Canada. My responsibilities included budget preparation, proposal development, bid review, engineering review, project management development, training, business development, and overall profit and loss responsibility.

In March of 2015 I semi-retired from Quanta but retained my title and continue to assist the operating companies listed above as well as additional Quanta Companies including: BWI Powerline Excavation, Btink Constructors, Canfer, Dacon, Dashiell Corporation, Hargrave Power, JCR Construction Company, North Houston Pole Line, Northstar, Potelco Inc., Quanta Energized Services and Valard Construction. My services include bid preparation, project review, technical assistance and safety on an as-needed basis.

Q. Do you have experience in engineering, construction and project management of high voltage electric transmission line?

A. Yes. PAR Electric has constructed the majority of major electric transmission projects to date in the U.S. A small sampling of projects PAR Electric has performed and that I was directly involved in include:

- American Electric Power's Jackson Ferry to Wyoming Junction 765kV Project
- American Transmission Company's GCMW 345kV Project
- Arizona Public Services Panda and Southwest Valley 500kV Project
- Bonneville Power Administration's Schultz to Wautona 500kV Project
- Kansas City Power and Light's LaCygne to Stillwell 345kV Energized Reconductor Project
- Nevada Power's Alturas to Reno 345kV Project
- San Diego Gas and Electric's Sunrise Power Link 500kV Project
- Allegheny Energy's TrAIL 500kV Project
- Southern California Edison's 500 kV Tehachapi Renewable Transmission Project.

Q. What responsibilities do you have on behalf of Quanta with respect to the Grain Belt Express Clean Line transmission project ("Grain Belt Express Project" or "Project")?

A. I am responsible for providing guidance on design, constructability, procurement, labor and equipment resources, budget preparation, property owner relations, schedule development, project management and controls, environmental mitigation, project labor agreements, subcontractor management and resource sharing.

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

A. I am testifying on behalf of Grain Belt Express Clean Line LLC ("Grain Belt Express"), and the purpose of my testimony is to describe the pre-construction, construction, and post construction process for completion of the Grain Belt Express Project. I also discuss economic impacts in terms of construction personnel and the various sub-contractors and vendors involved in the Project.

Q. Have you previously testified before any regulatory commissions?

A. Yes, I gave testimony to the Missouri Public Service Commission in 2004 regarding the South Harper power plant on behalf of Utilicorp. My testimony covered the impact of associated transmission lines.

II. PAR ELECTRIC AND QUANTA RELATIONSHIP WITH GRAIN BELT EXPRESS

Q. What is PAR Electric's role in the Grain Belt Express Project?

A. PAR Electric is an affiliate of Quanta. Grain Belt Express and Quanta have signed an HVDC Transmission Development Agreement. This Agreement commits each party to work towards an Engineering, Procurement and Construction ("EPC") contract and, in the course of doing so, commits Quanta to providing support for permitting, regulatory, construction planning and procurement strategy efforts. Quanta has specified that its affiliate, PAR Electric, will lead these efforts as primary contractor.

III. PAR ELECTRIC AND QUANTA QUALIFICATIONS AND EXPERIENCE

Q. What is the business of PAR Electric?

A. Founded in 1954, PAR Electric, a Missouri Corporation, is the largest outside electrical contracting company in North America. Based in Kansas City, Missouri, PAR Electric has permanent offices across the nation as well as temporary offices near its work sites. At any given time PAR Electric has over 3,000 employees and over 10,000 pieces of equipment.

PAR Electric is affiliated with the National Electrical Contractors Association ("NECA") and all of its physical workforce are members of the International Brotherhood of Electrical Workers ("IBEW").

The installation of foundations, lattice steel, tubular steel, wood pole structures, conductor and fiber optic ground wire and cables is PAR Electric's core expertise. PAR Electric owns more than 5,000 pieces of specialized transmission line construction equipment, the largest fleet in the nation. PAR Electric also has equipment that is easily transported to remote sites for foundation installation, tower erection and wire stringing.

PAR Electric has constructed all sizes and types of transmission lines – from 765kV six bundle, guyed V steel towers to 69 kV lines. PAR Electric and its Energized Services Group specialize in performing work on energized circuits up to 765kV, including energized reconductoring.

PAR Electric has completed substations of up to 500kV from site preparation through energization. PAR Electric is skilled at control wiring, equipment testing, bus welding and other facets of substation work. They have performed design/build turnkey projects up to 500kV. PAR Electric typically completes over 50 substation projects in a year. PAR Electric has the engineers, project managers and field personnel to complete any substation project.

Since 1954, PAR Electric has applied its fully-integrated EPC skills to its distribution work. PAR Electric performs both new plant installation and Underground Residential Distribution cable replacement on a scale unmatched by any other US contractor. Our method of installation includes trenching, cable plowing and directional boring. PAR Electric has extensive experience in the installation of all "dry utilities" on

new plant development. This work includes complete installation of not only electric distribution facilities, but also of natural gas, telecommunications (including fiber optic cable), and cable television facilities in a shared trench.

PAR Electric offers fully integrated planning, engineering, design, and technical services. They deliver all types of electrical solutions to the most challenging projects in the industry. PAR Electric provides the following engineering, planning and design services:

- Generation Engineering
- Transmission Systems
- Substations/Switching Stations
- Distribution Design
- Communications
- Utility Outsourcing
- Project Management
- Construction Management
- Technical Services
- Emergency Response

The following are wholly owned DBA subsidiaries of PAR Electric, operating under the following names:

- **Crux Subsurface, Inc. –** Crux is headquartered in Spokane Valley, Washington and is a foundation EPC contractor with more than 10 years of experience designing and constructing specialty foundations for transmission structures. Utilizing patented designs and custom equipment, Crux has

provided solutions to some of the most logistically challenging alignments in North America.

- **Longfellow Drilling –** Longfellow Drilling is headquartered in Clearfield, Iowa and is a specialty contractor in the installation of drilled pier foundation for a diversified customer base throughout the U.S.
- **Winco Powerline Services –** Winco offers helicopter assisted services for traditional electric maintenance and construction. Projects with limited access due to terrain or environmental concerns as well as those on aggressive schedules have benefited from Winco's aerial capabilities.

Q. What experience does PAR Electric have in constructing and project managing large, high-voltage transmission projects?

A. Since its founding in 1954, PAR Electric has been engaged in the business of constructing large transmission line projects. PAR Electric has constructed transmission projects on a design build Engineer, Procure, Construct basis; Engineer, Construct; and Construct only basis. PAR Electric has worked in every state within U.S. in the most challenging weather, terrain, and environmental conditions. PAR Electric has performed complete 500kV helicopter only access projects and 765kV projects in the Appalachian Mountains.

Attached as **Schedule TFS-2** is a representative project list which illustrates the experience and capabilities PAR Electric possesses in the electric transmission space. In addition, throughout its 60-plus-year history, PAR Electric has never failed to bring a project in on schedule and has never been assessed liquidated damages.

Q. How do Quanta and PAR Electric propose to manage construction of the Grain Belt Express Project?

A. Quanta and PAR Electric will assemble a proficient management team to properly execute an EPC project of this magnitude. Key positions in the management team will include, but are not limited to, Project Managers, Superintendents, Project Controls, Safety Managers, Material Managers, Quality Managers, Environmental Managers, Right-Of-Way ("ROW") Managers, Land Liaison Managers, and Community Relations. A proposed organizational structure is attached as **Schedule TFS-3**.

The management team's responsibility is to deliver a successful project on time, within budget, at the highest quality, while upholding safety and minimizing environmental and other impacts to land. Quanta and PAR Electric also recognize that a successful project cannot be achieved without the input of the local communities and land owners. Quanta and PAR Electric will engage local communities prior to the start of any construction by, for example, holding project awareness meetings at local facilities to allow the public and the EPC contractor to meet. These meetings will serve several purposes, including: (i) communicating to the public the details of the construction activities, sequencing, and proposed schedules; and (ii) affording Quanta and PAR Electric the opportunity to learn about local suppliers and service providers in the area that may be utilized on the Project. Quanta and PAR Electric have committed to Grain Belt Express to seek to maximize the use of local contractors and suppliers where practical.

Q. Please outline the anticipated sequence of design and construction activities for the Grain Belt Express Project.

A. The design process will consist of a series of engineering activities that will result in an Issue for Bid ("IFB") type of construction package, which allows for detailed construction pricing and planning. The engineering for the IFB package is usually 90% complete.

During this design phase, it is typical for the following items, some of which have already occurred on the Grain Belt Project, to be completed:

- Develop design basis memorandum;
- Perform "Laser Illuminated Detection And Ranging" or "LiDAR," which is used to accurately measure heights, elevations, and other geographic coordinates;
- Complete geotechnical investigation;
- Perform conductor selection study;
- Perform structure type evaluation;
- Develop structure family performance drawings for loading and clearances;
- Develop hardware assembly details;
- Perform detailed structure spotting and line design;
- Develop structure framing drawings and details;
- Generate plans and profiles and staking sheets for pricing;
- Develop foundations designs;
- Develop permit matrix; and
- Develop Landowner Obligations Report, which will list all of the landowner parcels with the owner's names, contact information, and any special provisions that have been agreed to between the transmission line owner and landowners, as described further in the Direct Testimony of Company witness Deann Lanz.

The design is typically completed at the time the Issue for Construction ("IFC") package is completed, which is typically done just prior to the start of construction. The items in this package typically include:

- Final boundary survey;

- Final environmental impact studies;
- Final structure locations (subject to possible relocation to avoid conflicts with drainage tiles);
- Final alignment; and
- Overall completion of design package.

During the period between design and the start of construction activities, the following activities are anticipated to be completed:

- Final project planning;
- Complete assembly of project team members;
- Establish material yards and project segment headquarters;
- Construct material yards and segment headquarters;
- Material procurement;
- Communicate access plan with ROW team members;
- Communicate ROW specifications, environmental regulations/controls, and Landowner Obligations to the Land Liaison Manager and ROW team members;
- Develop project-specific safety and environmental orientation material;
- Establish contacts and communication with local governments, county commissioners, Missouri Department of Transportation, and other relevant governmental units;
- Begin receiving materials for construction; and
- ROW boundary surveying.

The start of construction will begin with a project kick-off meeting with all major parties involved. PAR Electric anticipates commencing construction of the line in more

than one location along the route and working in sequential order from those starting points. The typical construction sequence is as follows:

- Surveying;
- ROW access / clearing;
- Installation of foundations;
- Hauling / spotting structure to structure locations;
- Assembling structures;
- Erecting structures;
- Electrically grounding structures;
- Pulling in sock line using a helicopter;
- Stringing, splicing, and sagging conductors;
- Permanently attaching conductors; and
- Restoring ROW to original condition.

More detail about construction activities, crew sizing, and equipment usage can be found in the Grain Belt Express Construction Plan, attached as **Schedule TFS-4**.

IV. GRAIN BELT EXPRESS JOBS IMPACT ON MISSOURI

Q. What presence does PAR Electric have in Missouri?

A. PAR Electric is headquartered in Kansas City, Missouri and is a Missouri Corporation. In addition to its corporate headquarters, PAR Electric's main equipment and fabrication facility is also located in Kansas City as well as additional offices in Blue Springs, Clinton and two St. Louis locations. Members of PAR Electric's management team serve on the NECA/IBEW Joint Apprenticeship Committee both nationally and locally where we work closely with IBEW Local Unions 53 in Kansas City and Local Union 2 in St. Louis.

PAR Electric has formed close alliances with fellow Missouri sub-contractors, suppliers and engineering firms. The majority of our equipment is purchased from Missouri suppliers.

The overwhelming majority of employees PAR Electric would utilize for construction of the Grain Belt Express Project are Missouri residents.

Q. Does PAR Electric have experience working with other Missouri companies participating in the Grain Belt Express Project?

A. Yes, PAR Electric has experience working with Hubbell Power Systems, ABB, and General Cable. Each are industry leaders in the electric infrastructure industry and have all delivered equipment to numerous PAR projects.

Q. What actions are Quanta and PAR Electric taking to establish the supply chain for the Grain Belt Express Project?

A. For major materials and components, Quanta and PAR Electric are currently seeking out suppliers that have operations or supporting operations in the areas of this line route or within close proximity. As Grain Belt Express witness Wayne Galli discusses, Grain Belt Express has already identified preferred suppliers for several important components, including conductor, insulators, and collector system transformers. Quanta and PAR Electric will also seek out local companies that can provide services and miscellaneous materials to support the overall construction. Prior to the start of construction, Quanta and PAR Electric will develop a utilization plan and update it monthly to document the utilization of local resources, services, and suppliers.

V. EMERGENCY RESPONSE AND RESTORATION

Q. Do Quanta and PAR Electric have experience performing emergency response and restoration work on high-voltage transmission lines?

A. Yes. For over 60 years PAR Electric has performed the majority of emergency restoration for virtually all of the Missouri electric utilities. PAR Electric can respond to any emergency anywhere within Missouri within a matter of hours. PAR Electric and Quanta have developed a proprietary emergency restoration program termed "Quanta Storms" which assess any type of emergency restoration scenario from initial assessment, material acquisition, and crew mobilization to final repairs.

At any given time, PAR Electric has more than 500 qualified personnel within the borders of Missouri to respond to any type of emergency.

Q. Does Grain Belt Express have an operations and maintenance plan in place for the Project?

A. Yes. Grain Belt Express' Restoration Plan is attached to my testimony as **Schedule TFS-5**, and it outlines the procedure that the Company will implement in response to an outage or other emergency conditions that could be encountered over the life of the Facility. This Restoration Plan was developed with input from Quanta and PAR Electric based upon their experience in dealing with past emergency restoration efforts throughout the Country. As the project continues to develop through receipt of regulatory approvals, final routing, detailed engineering, and construction, the Restoration Plan will be revised and additional detail will be added.

Q. Based upon your review of the Company's Restoration Plan, will the Restoration Plan, to be updated once Project design details and operations strategies are finalized,

adequately address public safety, new restoration structures, replacement conductor, and other special equipment?

A. Yes. As described in the Restoration Plan, the first priority is securing the line to ensure safety of the general public. To this end, the Restoration Plan requires immediate notification to local emergency response personnel in order to isolate damaged facilities. It also includes temporary road closures, assignment of wire watchers and coordination with other utilities.

Concurrent with the above, the Restoration Plan describes procedures for ensuring de-energization of the facilities following an emergency. Even if the line indicates that it has tripped out (de-energized and isolated from its source), it does not mean the conductor remains in a de-energized state. Conductors can drape across existing utility transmission or distribution circuits thus re-energizing the line. Further, other lines in close proximity can induce voltages on the line. Finally, environmental conditions such as wind or lightening can result in high static voltages imposed on an otherwise electrically isolated section of line. Therefore the installation of grounds is the first step in the restoration process.

Physically securing the line for the protection of the general public, adjacent utilities, public roadways, public and private structures and conveyances is next. This involves securing or removing damaged structures and physically removing conductors from affected areas.

Once the line has been made safe, permanent repairs can proceed. All repair work will be performed in compliance with all applicable local, state and federal codes including

the National Electrical Safety Code. Further, all work would be performed in compliance with OSHA Standard 1910.269 and 1926 Subpart V.

VI MAINTAINING LANDOWNER RELATIONSHIPS

Q. How do Quanta and PAR Electric plan to share information with landowners before, during and after construction?

A. The Land Liaison Manager will be assigned to the Project to work closely with the Grain Belt Express Land Team and the Agricultural Inspector (as described in the Direct Testimony of Deann Lanz) and in conjunction with such parties will communicate with landowners prior to entry on their properties, during construction operations, and after construction activities are completed, to address any concerns and maintain consistent communications. The ROW will be clearly delineated and affected property owners will be informed specifically what activities will occur on their land and when it will occur prior to commencement of any work. The Land Liaison Manager will be an employee who has experience in both the construction industry, and in this case, working knowledge of agriculture practices. This dual knowledge base will aid in conducting successful construction operations across agriculture lands.

The Land Liaison Manager will also work with Grain Belt Express and the Agricultural Inspector to ensure that all Landowner Obligations are honored by the contractor(s).

Q. How will Quanta and PAR Electric work with landowners during clearing and access road construction?

A. Prior to commencement of any work, the ROW will be clearly delineated utilizing stakes, flags etc. Trees which are to be cleared will be clearly marked and all property owners will have the ability to review our ROW development plan for questions and input.

Q. How will Quanta and PAR Electric restore and remediate affected areas during and after construction?

A. PAR will comply with all requirements outlined in the Project's Agricultural Impact Mitigation Policy, Missouri Agricultural Impact Mitigation Protocol, and Stormwater Pollution and Prevention Plan. See the Direct Testimony of witness Dr. James L. Arndt, Ph.D., for additional details.

Q. Does this conclude your Direct Testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing it to Construct, Own, Control, Manage, Operate and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an Interconnection on the Maywood-Montgomery 345 kV Transmission Line	)	Case No. EA-2016-_____

AFFIDAVIT OF THOMAS F. SHIFLETT

STATE OF Missouri)
ss
COUNTY OF Clay)

Thomas F. Shiflett, being first duly sworn on his oath, states:

1. My name is Thomas F. Shiflett. I am the Executive Vice President, Electric Power Division for the Quanta Services, Inc.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Grain Belt Express Clean Line LLC consisting of 17 pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Thomas F. Shiflett

Subscribed and sworn before me this 29 day of June 2016.

Notary Public

My commission expires: 3-26-2017

EBONY PARRIGON
Notary Public-Notary Seal
STATE OF MISSOURI
Commission for Clay County
My Commission Expires: March 26, 2017
ID. #13750999