

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, Operate,)
Control, Manage, 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-2014-0207

**RESPONSE TO
ORDER DIRECTING FILING OF ADDITIONAL INFORMATION**

Grain Belt Express Clean Line LLC (“Grain Belt Express” or “Company”) states the following as its response to the Commission’s February 11, 2015 Order Directing Filing of Additional Information (“Order”):

The Company here provides the Commission with the available information responsive to the Order, including requested updates on the Grain Belt Express Project (“Project”). Where information requested by the Order has already been provided and is in evidence, citations to the record are given. Some of the information requested, such as final interconnection agreements, will not be available until later in the development of the Project and after the receipt of key regulatory approvals including the Certificate of Convenience and Necessity (“CCN”) sought in this case. At this time Grain Belt Express provides the following responses:

1. Grain Belt Express shall provide a list of all properties on the selected project route in Missouri and designate for which properties easements have been acquired or are yet to be acquired to facilitate completion of the proposed Clean Line Energy project.

Response: Supplemental Exhibit 1 is a list of the properties on the Project’s route and a status report on the acquisition of easements for all such parcels. To date, Grain Belt Express

has spoken with 409 of the 525 individual landowners who own property along the Project's route. The primary purposes of the meetings with landowners have thus far been to introduce the Project and the easement agreement, collect feedback, and address any questions or concerns. The Company's intent in meeting with landowners far in advance of construction is to provide as much time as possible for landowners to understand the Project, review the easement agreement, and secure legal representation if desired. Grain Belt Express strives to identify issues specific to each landowner, and to address these issues by making minor route adjustments or modifying the easement agreement wherever possible. The large-scale acquisition of easements for transmission lines typically begins after the receipt of key regulatory approvals, such as when this Commission issues a decision on the Company's Application for a CCN.

Through the course of meetings with the Company, Missouri landowners have signed easement agreements for 45 tracts of property. Grain Belt Express has made route adjustments, reflected in the executed easement agreements, to accommodate the preferences of nine property owners. Grain Belt Express will continue to work with landowners to make route adjustments where practical and feasible. Missouri landowners receive an easement compensation package consisting of three components: an easement payment equal to 100% of the fair market fee value of the easement area; structure payments for each structure located on a specific property; and crop or damages payments, if applicable. The Company's compensation policy is described in detail in Mark Lawlor's Direct Testimony (Ex. 101) at pages 20-21.

2. Grain Belt Express shall set forth the status of its efforts to obtain the assent of the county commissions required by Section 229.100, RSMo, in the eight counties crossed by the selected project route in Missouri and provide supporting documentation thereof, including any letters of assent from those eight county commissions.

Response: The proposed route of the Grain Belt Express Project traverses eight Missouri counties. Pursuant to Section 229.100,¹ Grain Belt Express obtained the assent of all eight county commissions, which granted the Company permission to “erect poles for the suspension of electric light, or power wires ... through, on, under or across the public roads or highways” of those counties. The following county commissions granted such approval on the dates listed below.

Buchanan County	August 23, 2012
Clinton County	July 17, 2012
Caldwell County	September 5, 2012
Carroll County	July 16, 2012
Chariton County	July 16, 2012
Randolph County	September 6, 2012
Monroe County	July 30, 2012
Ralls County	August 23, 2012

Copies of these assents are attached as Supplemental Exhibit 2.

To the best of the Company’s knowledge, the Buchanan, Carroll, Chariton and Randolph County Commissions have not taken steps to modify or withdraw their Section 229.100 assents.

The Company understands that four other county commissions (Clinton, Caldwell, Monroe and Ralls) have taken actions which purport to alter their Section 229.100 authorizations in various ways, although not all of them have officially notified the Company to this effect. Some of these county commissions believed that they were “premature” in granting Section 229.100 assent. Letters that the Company has seen produced by other parties to this case indicate

¹ All statutory references are to the Missouri Revised Statutes (2000), as amended.

that these county commissions believed that they could not grant such assent until the Commission had first granted the Company's CCN Application. The status of approvals at these four county commissions is as follows:

Clinton County: By letter dated March 4, 2014, the Clinton County Commission stated that it "acted prematurely" in issuing its Section 229.100 assent and rescinded such assent. See Sched. LDL-4 at 1-2, L. Lowenstein Rebuttal Testimony (Ex. 306).

Caldwell County: By letter dated March 10, 2014, the Caldwell County Commission stated that it has not granted Section 229.100 assent and that prior correspondence to the Commission is rescinded. Id. at 6-7. See id. at 13.

Ralls County: By letter dated March 24, 2014, the Ralls County Commission "retracts and denies" its Section 229.100 assent "[u]ntil such time that Grain Belt Express Clean Line LLC has utility status in the State of Missouri and the approval of the Missouri Public Service Commission." It stated that if the Commission grants its approval to the Company "then the Ralls County Commission will be subject to section 229.100 RSMO 2000." Id. at 8-9.

Monroe County: In a document dated January 24, 2014, the Monroe County Commission stated that its "decision to grant [Section 229.100] authority was premature. Grain Belt Express Clean Line LLC cannot be granted such authority by the Monroe County Commission until such a time that Grain Belt Express Clean Line LLC has utility status in the State of Missouri by receiving the official approval of the Missouri Public Service Commission." It therefore "retracts and officially denies" Section 229.100 assent "[u]ntil such a time that Grain Belt Express Clean Line LLC has utility status in the State of Missouri and the approval of the Missouri Public Service Commission. After such approval has been given by the Missouri Public Service Commission to Grain Belt Express Clean Line LLC then the Monroe County

Commission may, pursuant to Section 229.100 RSMO 2000 approve and grant such authority as requested by Grain Belt Express Clean Line LLC.” Id. at 10-12.

The Company is aware that some counties have taken action to rescind their resolutions of support for the Project, which were adopted by all eight counties. Such resolutions of support are separate and distinct from Section 229.100 assents. The Buchanan County Commission stated on March 23, 2015 that it was “Rescinding the Resolution of Support of Grain Belt Express Clean Line adopted July 15, 2013” and adopted “A ‘Neutral’ Position on the Project.” See Notice of Communication, Case No. EA-2014-0207 (Mar. 23, 2015). This county commission took no action to rescind the Section 229.100 assent that it issued on August 23, 2012.

In a March 31, 2014 letter addressed to the Public Service Commission, the Chariton County Commission stated that it had sent this Commission "a Resolution in support of Grain Belt Express Clean Line LLC." The Chariton County Commission further advised that it believed it was “premature in our support.” The letter contains no reference to Section 229.100 or to the action that this county commission took on July 16, 2012 granting the Company authority under that statute. The Chariton County Commission did not rescind the Section 229.100 assent that it granted to Grain Belt Express. See Sched. LDL-4 at 3-4 (Ex. 306).

The Missouri Landowners Association filed suit against the Monroe County and the Caldwell County Commissions, as well as this Commission and the Company, alleging that these county commissions violated the Missouri open meetings statute, Section 610.020-.027, when they granted their Section 229.100 approvals to Grain Belt Express.

Several of the county commissions from which Section 229.100 assent is required appear to believe that the Company must first obtain a CCN before those county commissions can give

their approval under that statute. If this Commission grants a CCN to the Company, Grain Belt Express will obtain any necessary additional authority or clarification from these county commissions and submit evidence of such action to this Commission, as permitted by 4 CSR 240-3.105(1)(D)-(2).

3. Grain Belt Express shall provide descriptions and documentation, including, but not limited to signed contracts and letters of intent, of all commitments from Missouri utilities, municipalities, or cooperatives to obtain capacity, energy, and/or Renewable Energy Credits from the project.

Response: The Company's business model allows for wind generators to buy transmission capacity on the Project and then sell their output under a power purchase agreement (PPA) with load-serving entities in Missouri. Generator demand for transmission service to deliver power to the Project's delivery station in Missouri is strong, and is discussed in more detail in response to Paragraph 6.

Wind generators' interest in shipping power to Missouri is in response to the need of Missouri load-serving entities to buy low-cost, renewable power. Ameren Missouri's latest utility Integrated Resource Plan ("IRP"), filed with this Commission on October 1, 2014, called for the purchase of 400 MW of new wind power beginning in 2019. See Ex. 137, "Investing in Missouri: 2014 Integrated Resource Plan," Ch. 10 at p. 21, In re Ameren Missouri's 2014 Utility Resource Filing pursuant to 4 CSR 240 - Ch. 22, No. EO-2015-0084 (Oct. 1, 2014). It also found that "wind energy resources exhibit the lowest cost on an LCOE [levelized cost of energy] basis among all candidate resource options." Id., Ch. 6 at p. 1. A resolution adopted by the City Council of Columbia, Missouri on October 6, 2014 expresses the Council's support for the Project as an economically feasible renewable energy option to serve the City's customers and to

help the City fulfill its Renewable Energy Ordinance of 15% renewable energy usage by 2017. The City Council approved the resolution upon the recommendation of the city's municipal utility, Columbia Water & Light Department. See Sched. DAB-8, D. Berry Surrebuttal Testimony (Ex. 118).

Grain Belt Express has met with representatives of all major Missouri utilities, including Ameren Missouri, Associated Electric Cooperative, Inc., and the Missouri Joint Municipal Electric Utility Commission, and continues to engage in discussions with them. Public utilities are unlikely to make a definitive commitment to purchase energy delivered by the Project until it has received its major regulatory approvals, such as a CCN from this Commission. Until Grain Belt Express is authorized to build the Project, neither the Company nor wind generators can make binding commitments to deliver or sell power. Therefore, the absence of PPAs at this stage of the development of a large, multi-state transmission project like the Grain Belt Express Project is to be expected.

4. Grain Belt Express shall provide all interconnection agreements involving the proposed 500 MW substation in Ralls County, MO.

Response: The 500 MW converter station that the Company will construct in Ralls County will interconnect with the transmission system operated by the Midcontinent Independent System Operator, Inc. ("MISO"). MISO has a defined interconnection process that is overseen by the Federal Energy Regulatory Commission ("FERC"). Upon the completion of all the necessary interconnection studies, MISO will execute an interconnection agreement with Grain Belt Express and Ameren Missouri (as the relevant transmission owner). MISO's pro forma interconnection service agreement is Appendix 6 to Attachment X of the MISO Tariff.²

² See <https://www.misoenergy.org/Library/Repository/Tariff%20Documents/Attachment%20X.pdf>.

Once the interconnection service agreement is executed, it will be filed at FERC. Additional information regarding the status of the Company's interconnection studies with each of the regional transmission organizations ("RTOs") with which the Project will interconnect—MISO, Southwest Power Pool, Inc. ("SPP"), and PJM Interconnection LLC ("PJM")—is provided in response to Paragraph 13, below.

Because RTO interconnection studies and state CCN regulatory proceedings are each multi-year processes, they were undertaken simultaneously in order for this Project to meet a reasonable development schedule. However, there is no doubt that Grain Belt Express must complete the necessary interconnection studies and sign the interconnection agreements which are required by federal regulations. See Standard Generation Interconnection Procedures and Agreements, 18 C.F.R. § 35.28(f). Grain Belt Express agreed to do this as a condition to a CCN. See Sched. DAB-14 at p. 9, D. Berry Surrebuttal (Ex. 120).

5. Grain Belt Express shall provide descriptions, blueprints, maps and project cost estimates of the proposed 500 MW substation in Ralls County, MO.

Response: The final blueprint of the Ralls County converter station will be provided to the Commission following the completion of final detailed engineering by the HVDC technology vendor selected by the Company to design and construct the Project's three converter stations, as the Company agreed to in response to the condition proposed by Staff witness Shawn Lange. See D. Beck Rebuttal Testimony, 20:33-38 (Ex. 201); Sched. DAB-14 at 10 (Condition III-C), D. Berry Surrebuttal (Ex. 118). The converter station in Ralls County will deliver up to 500 MW of power to the MISO energy markets through an interconnection with the Ameren Missouri system along its 345 kV transmission line connecting the Maywood substation with the

Montgomery substation. This interconnection will be made via a single 345 kV circuit from the converter station to a nearby tap point along the existing transmission line.

Typical converter station diagrams provided by high-voltage, direct current ("HVDC") vendor Siemens were previously provided as schedules to Anthony Wayne Galli's Direct Testimony. See Scheds. AWG-1 and AWG-2, A.W. Galli Direct Testimony (Ex. 111). Grain Belt Express estimates that the Missouri converter station will cost \$100 million to build. The table below provides a breakdown of the component costs of a typical HVDC converter station.

Typical HVDC Converter Station Cost Breakdown	
Component	Estimate (\$ mm)
Valves	22
Transformers	22
DC Switchyard and Filter	6
AC Switchyard and Filter	9
Control and Protection	8
Civil and Mechanical Works	13.5
Auxiliary Power	2.5
Project Engineering and Administration	17
Total	100

Supplemental Exhibit 3 shows the converter station's proposed location in Ralls County. Supplemental Exhibit 4 is a single-line diagram of the Project, including the Missouri converter station. The converter station will be designed to comply with the requirements of the MISO interconnection agreement, as well as all RTO and federal reliability requirements.

6. Grain Belt Express shall provide descriptions with supporting documentation of all commitments from wind energy producers to provide energy for this transmission project.

Response: The results of the open solicitation for capacity conducted by Grain Belt Express show strong demand for transmission service to Missouri. The Company commenced the formal capacity allocation process or “open solicitation” pursuant to FERC’s Order Conditionally Authorizing Proposal and Granting Waivers, issued in Grain Belt Express Clean Line LLC, No. ER14-409-000, 147 FERC ¶ 61,098 (May 8, 2014), which granted it authority to negotiate bilateral agreements for 100% of the capacity of the Project.³

As of March 19, 2015, Grain Belt Express received requests for transmission service capacity to both the Missouri and Illinois converter stations. All of the requests came from wind generators who require new transmission infrastructure to deliver low-cost wind energy from projects under development in and around western Kansas to Missouri, Illinois, and Indiana customers in MISO and PJM. By providing service to MISO and PJM from the SPP footprint, the Project provides additional capacity across two significant RTO seams. Wind generators who purchase capacity on the Project will connect directly to the Company's Kansas converter station via an AC collection system of tie lines.

Ten wind generators submitted Transmission Service Requests to the Ralls County, Missouri converter station. The total amount of transmission service requested was 3,324 MW, representing more than six times the available Kansas-to-Missouri capacity offered by Grain Belt Express. A summary of the responses to the open solicitation is attached as Supplemental Exhibit (HC) 5.

Fourteen wind generators submitted Transmission Service Requests for 17,301 MW of service to the Illinois converter station, or approximately 4.5 times the available Kansas-to-

³ The solicitation was conducted pursuant to FERC's Policy Statement entitled “Allocation of Capacity on New Merchant Transmission Projects and New Cost-Based, Participant-Funded Transmission Projects,” 147 FERC ¶ 61,038 (Jan. 17, 2013).

Illinois capacity offered by the Project. The total capacity requested to both MISO and PJM delivery points of the Project was 20,625 MW, over 4.5 times the total available capacity of the Project.

The respondents to the open solicitation indicated in their Transmission Service Requests the amount of capacity they wish to purchase, their preferred term of service, and their preferred rate. Respondents also provided information regarding their creditworthiness and the status of their generation projects. Most respondents proposed paying a deposit in order to reserve service on the Project. These Transmission Service Requests indicate that demand for the Project's transmission service to Missouri and to PJM exceeds the size of the Project. The Company will rank bids in order to prioritize negotiations of commercial terms with potential capacity customers based on the information submitted, and will ultimately sign transmission service agreements with one or more of the respondents.

7. Grain Belt Express shall provide documentation, including but not limited to orders, contracts and letters of intent, that it has obtained the state or federal siting approvals required by law to begin construction of the entirety of this transmission project that is sited outside the state of Missouri. Transmission line siting approvals from the Kansas, Illinois, and Indiana state utility commissions shall be sufficient to satisfy this condition. If any such application is pending, Grain Belt Express will provide the status of the application to the Commission.

Response: Grain Belt Express has received regulatory approvals from the state utility commissions of Kansas and Indiana. On December 7, 2011, the Kansas Corporation Commission ("KCC") granted the Company a Transmission-Only Certificate to operate as a public utility in Kansas. See Sched. DB-3, D. Beck Rebuttal Testimony (Ex. 201).

Subsequently, on November 7, 2013, the KCC granted Grain Belt Express a siting permit for the Kansas portion of the Project. See Sched. DB-4, D. Beck Rebuttal Testimony (Ex. 201).

On May 22, 2013, the Indiana Utility Regulatory Commission granted Grain Belt Express a certificate to operate as a public utility in Indiana. See Sched. DB-5, D. Beck Rebuttal Testimony (Ex. 201).

On April 10, 2015, Grain Belt Express filed a petition with the Illinois Commerce Commission seeking a certificate of public convenience and necessity to operate as a public utility in Illinois, and to construct, operate, and maintain the Project. This is the last state from which the Company will seek regulatory approval for the project. Grain Belt Express filed this request pursuant to an expedited process under Illinois law, which will result in an order from the Illinois Commission by December 2015.⁴

In this case, Grain Belt Express has agreed to a condition proposed by Staff that states:

“Prior to commencing construction of the DC component of the Grain Belt Express Project in Missouri, Grain Belt Express will obtain the state or federal siting approvals required by law to begin construction on the entirety of the direct current portion of the Grain Belt Express Project outside the state of Missouri. For the avoidance of doubt, transmission line siting approvals from the Kansas, Illinois and Indiana state utility commissions shall be sufficient to satisfy this condition.” See D. Beck Rebuttal Testimony at 18: 9-15 (Ex. 201); Sched. DAB-14 at p. 4, D. Berry Surrebuttal (Ex. 120).

This condition assures the Commission that all necessary approvals will be in place before the Project is constructed in Missouri.

⁴ The Illinois Commerce Commission recently ordered “that a Certificate of Public Convenience and Necessity is hereby issued to Rock Island Clean Line LLC pursuant to Section 8-406 of the Public Utilities Act” See Order at 222, In re Rock Island Clean Line LLC, Case No. 12-0560 (Ill. Comm. Comm’n, Nov. 25, 2014).

8. Grain Belt Express shall provide completed documentation of the Grain Belt Express plan, equipment, and engineering drawings to achieve compliance with the NERC standards for a project of this scope and size, National Electrical Safety Code for a project of this size and scope, rule 4 CSR 240-18.010, and the Overhead Power Line Safety Act, § 319.075 et seq., RSMo.

Response: NERC standards and National Electrical Safety Code (“NESC”) standards are the same for transmission projects like the Grain Belt Express Project as they are for other electric transmission lines operating in Missouri and the United States. The Company commits to comply with all NERC, NESC, and Missouri statutory and regulatory requirements applicable to the Project. Compliance with all pertinent regulations administered by authorities other than this Commission is generally assumed when the Commission grants a CCN to an applicant, as it has in the past. See Report & Order at 3-4, In re Union Elec. Co., No. EA-2013-0089 (Apr. 24, 2013) (345 kV line in Cape Girardeau County); Report & Order at 12, 17, In re Transource Missouri, LLC, No. EA-2013-0098 (Aug. 7, 2013) (two 345-kV transmission projects); Report & Order at 11-12, In re Union Elec. Co., No. EO-2002-361(Aug. 21, 2003) (345 kV Callaway-Franks line in Maries, Osage and Pulaski Counties).

Grain Belt Express will comply with the requirements of the NERC reliability standards that are applicable to its activities, as detailed in its proposed NERC Compliance Plan, attached as Supplemental Exhibit (HC) 6. Additionally, the Company is applying the results of studies that were conducted for the design of other HVDC transmission lines to ensure that the Project will meet the NESC requirements and comply with Good Utility Practice.⁵ Preliminary design

⁵ FERC Order 888 defines "Good Utility Practice" as follows: "Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the

criteria have been prepared by POWER Engineers, Inc. in order to guide this process, which were attached in a 94-page document admitted into evidence as Schedule AWG-3 to the Direct Testimony of Anthony Wayne Galli (Ex. 111).

Grain Belt Express is aware of the Commission's electric utility operational standards and the Missouri Overhead Power Line Safety Act, and will comply with all relevant aspects including: 4 CSR 240-23.010 (Electric Utility System Reliability Monitoring and Reporting Submission Requirements), 4 CSR 240-23.020 (Electric Corporation Infrastructure Standards), and 4 CSR 240-23.030 (Electrical Corporation Vegetation Management Standards and Reporting Requirements).

Grain Belt Express has agreed to Staff's recommendation that the Company comply with these statutes and regulations if a CCN is issued by the Commission. See D. Beck Rebuttal Testimony at 20: 28-31, citing S. Lange Condition 3 (Ex. 201); Sched. DAB-14 at 10 (accepting S. Lange Condition 3 [listed as Condition III-B]), D. Berry Surrebuttal Testimony (Ex. 120).

9. Grain Belt Express shall provide a detailed description and related documentation of any final project design elements that were not previously described to the Commission or have changed since the hearing in this case.

Response: POWER Engineers, Inc. has developed preliminary design criteria and requirements for the Project in a 94-page document admitted into evidence as Schedule AWG-3 to the Direct Testimony of Anthony Wayne Galli (Ex. 111), and the Company provided preliminary cost estimates at p. 3 of its Application.

decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region."

On February 23, 2015 Grain Belt Express engaged Quanta Electric Power Services, LLC (“Quanta”), one of the largest construction firms in North America, to be the Project’s engineering, procurement, and construction (“EPC”) partner. Quanta and its operating units have been involved in constructing several transmission line projects in Missouri, including Sho-Me Power Electric Co-operative’s Thayer-Gobbler Knob 345kV transmission line and Kansas City Power & Light Company’s LaCygne – West Gardner 345kV transmission line re-conductor. The HVDC Transmission Line Development Agreement between Grain Belt Express and Quanta is attached as Supplemental Exhibit (HC) 7. PAR Electrical Contractors, Inc., based in Kansas City, Missouri, will serve as one of Quanta’s subcontractors on the Project. Once the Project receives key regulatory approvals, Quanta will develop final designs and a final cost estimate for the Project, based on the design criteria and preliminary structure types and requirements that POWER Engineers, Inc. has developed. The Company will provide detailed designs and final cost estimates to the Commission once they are complete.

As described in the response to Paragraph 5, above, the final blueprint of the Ralls County converter station will be provided to the Commission following the completion of final detailed engineering by the HVDC technology vendor selected by the Company to design and construct the Project's three converter stations. The Company agreed to do this in response to the condition proposed by Staff witness Shawn Lange. See D. Beck Rebuttal Testimony, 20:33-38 (Ex. 201); Sched. DAB-14 at 10 (Condition III-C), D. Berry Surrebuttal Testimony (Ex 118).

10. Grain Belt Express shall provide a list of businesses with whom Grain Belt has entered into an agreement to provide materials or services for this transmission project and, for each, provide copies of these agreements, including, but not limited to contracts

and letters of intent and provide the estimated cost of these materials or services and whether such business is located in the state of Missouri.

Response: Grain Belt Express has signed preferred supplier agreements with three businesses located in Missouri:

(1) Hubbell Power Systems, Inc. (“Hubbell”) will manufacture the insulator cores and conductor hardware at its Centralia, Missouri facility. The Company’s Memorandum of Understanding (“MOU”) with Hubbell is attached as Supplemental Exhibit (HC) 8. It designates Hubbell as the “Preferred Supplier” of conductor hardware and polymer insulators for the Project. Hubbell will also establish a supplier base within the Project area to source raw material from local companies. To support the agreement with Grain Belt Express, Hubbell will invest over \$9 million in its Centralia facilities. While precise cost estimates require final design work and knowledge of commodity prices at the time the order is placed, Grain Belt Express and Hubbell estimate that the conductor hardware and polymer insulators for the Project will cost approximately \$7.0 million.

(2) General Cable Industries, Inc. (“General Cable”) will manufacture roughly 23 million feet of steel core for the Project’s transmission line conductor in Sedalia, Missouri where it employs approximately 185 people. General Cable has also committed to source all of the aluminum rod used in the conductor it manufactures for the Project from the Noranda Aluminum smelter near New Madrid, Missouri. Grain Belt Express estimates that the order of more than 20 million feet of conductor core will cost approximately \$109.2 million. The MOU with General Cable is attached as Supplemental Exhibit (HC) 9, and designates General Cable as the “Preferred Supplier” of conductor for the Project.

(3) ABB Inc. (“ABB”) will manufacture AC transformers associated with the Project’s AC collector system at ABB’s St. Louis, Missouri manufacturing facility, supporting approximately 20 jobs. Grain Belt Express estimates that the AC transformers will cost approximately \$10 million. The Company’s MOU with ABB is attached as Supplemental Exhibit (HC) 10, and designates ABB as the “Preferred Supplier” of AC transformers for the Project.

Grain Belt Express has signed two other agreements with preferred suppliers located in other states. The Company signed a preferred supplier agreement with Southwire Company, LLC, which will manufacture the dedicated metallic return conductor for the line in Flora, Illinois. The agreement is attached as Supplemental Exhibit (HC) 11. Hawkeye Helicopter, based in Ottawa, Kansas, is a preferred supplier for the Project, which Grain Belt Express has engaged to conduct route review flights.

Schedule DAB-6 to David Berry's Direct Testimony (Ex. 118) contains letters from ABB, Hubbell, and General Cable that describe what the supplier agreements contemplate for each company. Grain Belt Express will finalize additional contracts with preferred suppliers for the Project once detailed design work is completed with Quanta.

11. Grain Belt Express shall provide an update as to: 1) what amount of funds have been invested in the project by Grain Belt Express, its affiliates, or any other entity, 2) what amount of funds have been spent on the project, and 3) the total project cost.

Response: Supplemental Exhibit (HC) 12 sets forth how much has been invested in the Project by Grain Belt Express and its affiliates, and the total amount spent on the Project as of February 28, 2015.

The total Project cost is estimated to be \$2.2 billion. Of this amount, approximately \$500 million will be spent on the Missouri portion of the Project, with roughly \$400 million allocated to the transmission line and \$100 million for the converter station. The \$2.2 billion estimate does not include network upgrade costs required to interconnect the Project with each RTO. Based on the SPP, MISO, and PJM interconnection study results prepared to date, Grain Belt Express estimates that the Company will be responsible for approximately \$520-550 million in network upgrades and attachment facilities. Grain Belt Express has accounted for these additional costs in the financial modeling of the expected transmission charge on the Project and the resulting delivered cost of energy. See Surrebuttal Testimony of D. Berry at 19-20 (Ex. 120).

12. Grain Belt Express shall perform the following studies and file the results of the studies in this case with any analysis it deems relevant. These studies should be designed after Staff and other parties have had the opportunity to provide meaningful input regarding the quality of the data and the reasonableness of the inputs used for (1) load assumptions for the year 2019, (2) generator capacities, efficiencies, dispatch stack, or bid amounts for the year 2019, (3) the wind delivery used for the year 2019, (4) the level of precision used in modeling factors such as generator heat rate curve, transmission loading curves, or other inputs to the PROMOD model used for the studies:

- a. Production modeling that incorporates:**
 - (1) day-ahead market prices to serve load;**
 - (2) real-time market prices to serve load;**
 - (3) ancillary services prices to serve load;**
 - (4) day ahead market prices realized by Missouri-owned or located generation;**
 - (5) real-time market prices realized by Missouri-owned or located generation;**
 - (6) ancillary services prices realized by Missouri-owned or located generation;**
and
 - (7) an estimate of the impact of Grain Belt Express' transmission project on the operational efficiency of Missouri-owned or located generation.**

- b. Production, transmission, and economic modeling or analysis to determine:**
- (1) the cost of transmission upgrades that may be necessary to resolve any transmission constraints that its energy injections will cause or exacerbate;**
 - (2) the net impact to Missouri utilities of picking up Missouri energy by day for export to PJM or SPP; and**
 - (3) whether the variability of the injected wind could be better managed in the SPP prior to injection.**

If Grain Belt Express cannot complete any of these studies due to lack of access to necessary data, it shall file proof that the data is inaccessible and complete the studies to the extent possible.

Response:

A. Comments and Recommendations Preceding the Studies

Pursuant to the Commission's directive that the Company design studies responsive to Paragraph 12 after Staff and other parties had the opportunity to provide meaningful comments regarding the quality of the data and the reasonableness of the inputs to the studies, Grain Belt Express and Staff conducted an initial conference call on February 18, 2015. Present on the call were representatives of both Grain Belt Express and Staff, including their respective counsel. In a conference call that lasted approximately 45 minutes, Staff suggested and the Company agreed that: (a) the Company would provide the parties to the case with a statement of proposed inputs and methodology regarding the studies to be run; (b) the parties would be invited to a workshop meeting in Jefferson City to discuss the design of the studies; and (c) the parties would be able to provide both oral and written comments regarding the studies.

On February 20 Grain Belt Express advised the parties that it had conducted a conference call with Staff on February 18, and that Staff had reserved Room 316 at the Governor Office

Building in Jefferson City for a workshop to be conducted on Thursday, March 5 beginning at 9:00 a.m. to discuss data quality and inputs issues.

Subsequently, on February 27 Grain Belt Express sent to the parties and their counsel a document containing the assumptions that it proposed to use in the studies called for by Paragraph 12. The Company invited them to present oral comments at the March 5 workshop meeting. It requested that all written comments be provided no later than Friday, March 13, so that the studies could be completed and filed with the Commission by its deadline of April 11.

The March 5 workshop meeting lasted a little over two hours, and was attended by representatives from the Company, Staff and their counsel. Counsel for the Missouri Landowners Association and United for Missouri were present. Counsel for Show Me Concerned Landowners and for the Reicherts and Meyers participated by telephone. David Berry from the Company and outside consultant Robert Cleveland of Leidos Engineering, LLC (both of whom testified at the evidentiary hearing) presented an overview of production cost modeling, scenario assumptions, and inputs to the modeling. Staff provided suggestions and recommendations, as did counsel for Show Me Concerned Land Owners.

Thereafter, Staff summarized its comments and recommendations in a two-page document, which it circulated to the parties on March 12. Show Me Concerned Landowners filed written comments in this proceeding on March 12.

B. Assumptions for Study Scenarios and Responses to the Parties' Comments and Recommendations

In response to the Commission's directive and the comments received from Staff and other parties, Grain Belt Express retained the Brattle Group to conduct a new study regarding the ancillary services market and the likely effect of the Project on ancillary services prices. Mr. Cleveland of Leidos Engineering conducted the other production cost modeling studies directed

by the Commission. The studies performed by Mr. Cleveland reflect comments provided by Staff and other parties, as described further in Supplemental Exhibit 13.

C. Results of the Additional Studies

The Company attaches three reports that present additional studies and analysis, as directed by the Commission. Supplemental Exhibit 13 is a report prepared by Robert Cleveland of Leidos Engineering that sets forth the results of additional production cost modeling. Supplemental Exhibit 14 is a report prepared by The Brattle Group, Inc. regarding wind integration and ancillary services prices. Supplemental Exhibit 15 is an analysis prepared by the Company of whether the variability of wind resources could be better managed in SPP prior to injection.

Supplemental Exhibit 13 updates the PROMOD production cost modeling presented in the Direct Testimony of Gary Moland, adopted by Mr. Cleveland (Ex. 116) and in Mr. Cleveland's Surrebuttal Testimony (Ex.117), and incorporates certain suggestions of Staff and other parties. In response to Staff's concern that the model properly reflect wind generation's uncertainty and variability, Mr. Cleveland modified the wind profile to be more variable, and added a day-ahead forecast error to wind generation. After these changes to the model, Mr. Cleveland found that the Project: (1) Reduces wholesale electricity prices to serve load; (2) Lowers the adjusted production cost of Missouri utilities that use their own generation to serve load; (3) Has no substantial impact on the operational efficiency of generation owned by Missouri utilities; and (4) Does not create meaningful congestion due to the strength of the grid at the point of injection in Missouri.

A comparison of the updated production cost modeling results with those presented in Mr. Cleveland's Surrebuttal Testimony is below:

Increase in Demand Cost Savings to Missouri with Project (\$M)

	April 2015 - Additional Study	October 2014 Filing	Variance
Business as Usual	27	22	5
Slow Growth	17	11	6
Robust Economy	76	69	7
Green Economy	42	32	10

Project Impact on Average Missouri LMP (\$/MWh)

	April 2015 - Additional Study	October 2014 Filing	Variance
Business as Usual	-0.27	-0.22	-0.05
Slow Growth	-0.19	-0.11	-0.08
Robust Economy	-0.75	-0.67	-0.08
Green Economy	-0.43	-0.30	-0.13

Decrease in Adjusted Production Costs to Missouri with Project (\$M)

	April 2015 - Additional Study	October 2014 Filing	Variance
Business as Usual	-3.9	-2.6	-1.3
Slow Growth	-5.6	-5.2	-0.4
Robust Economy	-9.6	-12.1	2.5
Green Economy	-17.7	-10.7	-7.0

As Supplemental Exhibit 13 states, the prices reported by PROMOD are a combination of real-time and day-ahead electricity prices. Staff expressed a desire for PROMOD to be run on a 5-minute interval, which is beyond the limitations of the PROMOD software which the Order directed be used. The Company discussed this limitation with Staff at the March 5 workshop where Staff conceded that the modeling it desired may not be possible. MISO, SPP and PJM all use PROMOD on an hourly basis. However, the Brattle report (Supplemental Exhibit 14) does address Staff's concern about wind generation variability over a sub-hourly interval.

In Supplemental Exhibit 14 the Brattle Group estimates the effects of the Project on ancillary services prices and needs. The study concludes that based on current MISO rules, the Project would not lead to any additional need for ancillary services and, therefore, would have no effect on ancillary service prices. Theoretically, if MISO did begin to set regulating reserve requirements based on wind variability, the Project could lead to a small increase in regulating reserve needs of about 4.2 MW. However, based on historical congestion patterns, this additional regulating reserve could be sourced from the most efficient generator anywhere in the MISO footprint. The upper bound of the additional cost would be 0.1 cent/MWh (or 1/1,000th of a cent per kWh) of load served in MISO.

Furthermore, the Brattle Group found that the wind generation enabled by the Project in western Kansas is weakly correlated with existing MISO wind generation. This means that western Kansas wind generation will add less variability to the MISO system, and place fewer demands on ancillary services, than adding wind generation within the MISO footprint.

Supplemental Exhibit 15 is an analysis prepared by the Company regarding whether wind variability could be better managed in SPP before moving power to MISO or PJM. The report concludes that this option would not be feasible, economic or necessary because of (1) The SPP transmission system does not support injecting over 4,000 MW of generation in western Kansas; (2) Grain Belt Express and the respondents to its capacity solicitation do not possess the necessary transmission rights; and (3) MISO and PJM are better able to manage the variability of the wind generation connected to the Project due to their higher loads, stronger transmission systems, and uncorrelated wind generation which would smooth out the variability of western Kansas wind power delivered by the Project.

13. Grain Belt Express shall provide the following for the proposed transmission project:

- a. completed Storm Restoration Plans,**
- b. the Interconnection Agreement with SPP,**
- c. the Interconnection Agreement with MISO,**
- d. the Interconnection Agreement with PJM,**
- e. the MISO Feasibility Study/Studies,**
- f. the MISO System Planning Phase Study,**
- g. the MISO Definitive Planning Phase Study (all cycles),**
- h. the SPP Dynamic Stability Assessment,**
- i. the SPP Steady State Review,**
- j. the SPP System Impact Study,**
- k. the PJM Feasibility Study/Studies,**
- l. the PJM System Impact Study,**
- m. the PJM Facilities Study, and**
- n. each other study necessary or required for interconnection with SPP, MISO or PJM.**

Response: The status of these plans, agreements, and studies is provided below. To the extent that any study or report does not currently exist, Grain Belt Express has agreed to submit it to the Commission when it becomes available. See Surrebuttal Testimony of A.W. Galli at 6 (Ex. 113); Sched. DAB-14 at 9, Surrebuttal Testimony of D. Berry (Ex. 120).

a. Complete storm restoration plans

Attached as Supplemental Exhibit 16 is the Company's storm restoration plan, including a preliminary emergency response flow chart. This plan will be revised and updated following receipt of key regulatory approvals, and the final engineering and construction of the Project.

b. Interconnection Agreement with SPP

ITC Great Plains, LLC completed its Generation Interconnection Facilities Study of Grain Belt Express on March 19, 2015. It is attached as Supplemental Exhibit 17. Grain Belt Express will now begin negotiating an interconnection agreement with ITC Great Plains and SPP (of which ITC Great Plains is a transmission owner member). Once executed, this agreement

will be filed with FERC. The pro forma SPP interconnection agreement can be found in Appendix 6 to SPP's Generator Interconnection Procedures.⁶

c. Interconnection Agreement with MISO

Please see the response to Paragraph 4, above. Grain Belt Express will execute an interconnection service agreement with MISO, which will be filed with FERC.

d. Interconnection Agreement with PJM

PJM completed the System Impact Study for the Project in October 2014, which was admitted into evidence as Schedule AWG-10 to the Surrebuttal Testimony of A.W. Galli (Ex. 113). Grain Belt Express executed a Facilities Study Agreement with PJM on October 1, 2014. Pursuant to that agreement, PJM is currently conducting a Facilities Study, which includes performing a re-tool System Impact Study, as described in the response to Paragraph 13. Once the Facilities Study is completed, Grain Belt Express will execute an interconnection agreement with PJM and with American Electric Power Company, who owns the relevant transmission facilities in western Indiana. PJM's form of interconnection service agreement for merchant transmission lines is found in Part VI, Attachment O to the PJM Tariff.⁷ Once executed, this interconnection service agreement will be filed with FERC.

e. MISO Feasibility Study/Studies

In October 2012, MISO completed the Feasibility Study of the planned 500 MW injection along Ameren Missouri's Maywood-Montgomery 345 kV transmission line, pursuant to an interconnection request filed in September 2012 and assigned queue position J-255. The Feasibility Study did not identify any constraints associated with the 500 MW injection into

⁶http://sppoasis.spp.org/documents/swpp/transmission/studies/Generation%20Interconnection%20Agreement%20Pro%20Forma_March%202014.pdf

⁷ <https://www.pjm.com/~media/documents/agreements/tariff.ashx>.

MISO at the requested locations. The study was admitted into evidence as Schedule AWG-6 to the Direct Testimony of A.W. Galli (Ex. 111).

f. MISO System Planning Analysis Study

MISO completed this study, entitled “System Impact Study Final Report” and dated November 2014, which was admitted into evidence as Exhibit 150. See Order Admitting Late-Filed Exhibit (Dec. 16, 2014). The study did not identify any injection-related constraints associated with the 500 MW injection into MISO at the requested location.

g. MISO Definitive Planning Phase Study (all cycles)

The final study phase in MISO’s interconnection study process is the Definitive Planning Phase (“DPP”). The Company’s request is awaiting entry into the DPP Study cycle and is, therefore, currently in a “parked” status with MISO as Grain Belt Express awaits final state regulatory approvals and as explained in the response to Paragraph 4, above. It is also being held in a “parked” status so that the results from the PJM Retool Study, which is being conducted as part of the PJM Facilities Study, can be incorporated into MISO’s DPP study. Since the required PJM system upgrades are near the MISO-PJM seam, MISO’s DPP study will need to be consistent with the PJM studies. The PJM Retool Study is expected to be completed in the third quarter of 2015, at which time the Project will leave its “parked” status and enter the next available MISO DPP Study cycle which is expected to be in February 2016.

h. SPP Dynamic Stability Assessment

This executive summary of this March 2013 assessment is attached as Supplemental Exhibit 18. The entire assessment is approximately 2,500 pages.

i. SPP Steady State Review

This January 7, 2013 review is attached as Supplemental Exhibit 19.

j. SPP System Impact Study

The SPP System Impact Study report was admitted into evidence as Schedule AWG-4 to the Direct Testimony A.W. Galli (Ex. 111).

k. PJM Feasibility Study/Studies

This study was completed in January 2013 and is attached as Supplemental Exhibit 20.

l. PJM System Impact Study

This study, entitled “PJM Impact Study Report for PJM Merchant Transmission Request Queue Position X3-028” and dated October 2014, was admitted into evidence as Schedule AWG-10 to the Surrebuttal Testimony of Wayne Galli (Ex. 113). PJM is currently conducting a re-tool of the System Impact Study as part of the Facilities Study to include a new alternative that could provide for a more robust interconnection to the PJM grid and potentially reduce the cost of upgrades.

m. PJM Facilities Study

PJM is currently conducting the Facilities Study pursuant to a Facilities Study Agreement which Grain Belt Express and PJM entered into as of October 1, 2014 (signed by the Company on October 31, 2014 and by PJM on November 5, 2014). A copy of this agreement is attached as Supplemental Exhibit 21.

n. Each other study necessary or required for interconnection with SPP, MISO or PJM

Certain design-level studies will be conducted by the HVDC technology vendor selected by the Company for the Project. These studies will be completed to ensure that all three converter stations meet the performance requirements prescribed by SPP, MISO and PJM, as well as by all interconnecting utilities, and will be presented to all the RTOs for their review and acceptance.

* * *

This completes the Company's response to the Commission's Order. Grain Belt Express has agreed to submit a final storm restoration plan, all RTO study results, and executed interconnection agreements with SPP, MISO, and PJM to the Commission prior to beginning construction, and has agreed that an Order from the Commission granting the Company a Certificate of Convenience and Necessity may be conditioned upon the receipt of these documents, as proposed by Staff. See Rebuttal Testimony of Daniel I. Beck at 20:9-26 (Ex. 201).

WHEREFORE, Grain Belt Express Clean Line LLC, as directed by the Commission in its February 11, 2015 Order, provides this Response and the accompanying Supplemental Exhibits, which it requests be entered into the record of this proceeding.

/s/ Karl Zobrist

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ATTORNEYS FOR GRAIN BELT EXPRESS
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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served upon all parties of record by email or U.S. mail, postage prepaid, this 13th day of April 2015.

/s/ Karl Zobrist
Attorney for Grain Belt Express Clean Line LLC