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

Grain Belt Express Clean Line LLC's responses to Missouri Landowners Alliance First Set of Data Requests
Directed to Grain Belt witness David Berry

1. Please state Grain Belt or Clean Line's best estimate of the following parameters of the project for its first full year of operations: (a) total number of wind turbines connected to the Project at the Kansas interconnection; (b) total name-plate capacity of all the turbines connected to the Project at the Kansas interconnection; (c) annual average capacity factor of the turbines connected at the Kansas interconnection; (d) average annual bus bar cost of the energy from the wind turbines connected at the Kansas interconnection; (e) average price charged per MW by Grain Belt for transmission capacity for delivery of energy from the Kansas interconnection to the Missouri interconnection; (f) average price charged per MW by Grain Belt for transmission capacity for delivery of energy from the Kansas interconnection to the Indiana interconnection; (g) if applicable, average price charged per MW by Grain Belt for transmission capacity for delivery of energy from the Missouri interconnection to the Indiana interconnection; (h) total MWHs of energy delivered at the Missouri interconnection; (i) total MWHs of energy delivered at the Indiana interconnection; (j) average total purchase price per MWh of energy delivered and sold at the Missouri interconnection (including price of energy and price of transmission); (k) average total purchase price per MWh of energy delivered and sold at the Indiana interconnection (including price of energy and price of transmission); (l) total generator imbalance charges to be paid by the Kansas wind generators; (m) total generator imbalance charges related to project deliveries which are paid by any entity other than the Kansas wind generators; (n) the total of all costs for all other ancillary services (other than for balancing) to be paid by the Kansas wind generators; (o) the total of all costs for all other ancillary services (other than for balancing) to be paid by entities other than the Kansas wind generators; (p) total cost per MWh for the Kansas wind generators to gather and supply the meteorological and operational data required by FERC Order 764 in docket RM10-11; (q) percent of the MWhs of energy delivered and sold in Missouri which are expected to be sold under firm contracts; (r) percent of the MWhs of energy delivered and sold at the Indiana interconnection which are expected to be sold under firm contracts; (s) MWHs of the energy delivered and sold at the Missouri interconnection

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43. For each state listed in answer to the preceding item, list the MWHs which are projected to be sold to buyers in that state in the first full year the line is in service.

Response: Grain Belt Express does not possess a specific estimate of the amount of energy to be sold to each state, but Missouri utilities are likely to be the largest purchasers of renewable energy delivered by the line.

44. Will a customer outside the PJM market be permitted to purchase power from the Line if it can arrange for transmission service from the PJM interconnect to its own service territory?

Response: Yes.

45. Please provide a copy of the financial model referenced at p. 13 lines 4-7 of your direct testimony.

Response: Please see GBX Response to Show Me-1.2.Attachment 1, a copy of which is attached to MLA Data Request 20.

46. With reference to page 27 lines 5-6 of your direct testimony, how many MW from the 26 wind projects are currently under construction?

Response: Grain Belt Express possesses no information indicating that any of these projects that are currently under construction.

47. With reference to those 26 wind projects, how much has each spent on construction of that wind project?

Response: Grain Belt Express has no knowledge of the amount spent on each project.

48. What is the distance between each of the 26 wind projects and the Kansas interconnection?

Response: Please refer to Grain Belt Express Responses to MLA Data Requests to Michael Skelly 51 (Attachment 1-page 7) and 52 (Attachment 1) which provide information on the location of the wind farms and their approximate distance to the Kansas interconnection.

49. With respect to the hourly energy profile for wind generation in western Kansas which you provided to Mr. Moland (Moland direct testimony, p. 4 lines 20-22), please describe the following: (a) the data gathering process which was used to collect the information used in your profile, including but not limited to the measuring devices which were used; where each of the measuring devices was located; and the time period over which the data incorporated into your profile was collected; and (b) the data processing system used in developing the profile; i.e., the names and descriptions of the models used to transform the raw data into the hourly wind profile.

Response: Mr. Berry selected ten wind generation sites (numbers 62, 100, 105, 189, 239, 283, 324, 343, 362 and 389) from the Eastern Wind Integration and Transmission Study based on their location in Western Kansas. He then aggregated the sites' output in Microsoft Excel and provided the document to Mr. Moland. The only adjustment made was to site 62, whose output was scaled down by 44% so that the maximum output produced was 716 MW. The hourly wind energy profile for each individual site was developed by AWS Truepower. The profiles are available here: http://www.nrel.gov/electricity/transmission/eastern_wind_methodology.html#output.

50. If the hourly energy profile mentioned in the preceding item was developed by an organization outside Grain Belt or Clean Line, please identify that organization and the individual primarily responsible for developing the profile.

Response: AWS Truepower prepared the individual wind energy profiles.. Grain Belt Express does not know the individual primarily responsible for developing the profile. The profiles were prepared using mesoscale modeling techniques and have been used in a number of wind integration studies. NREL's website, http://www.nrel.gov/electricity/transmission/eastern_wind_methodology.html#methodology, further describes the profiles development.

51. With respect to the hourly energy profile for generation in western Kansas which you provided to Mr. Moland (Moland direct testimony, p. 4 lines 20-22), to the extent not provided in response to the previous items please list and describe all computer models which were used in the development of the output data.

Response: Mr. Berry used Microsoft Excel to aggregate the individual site profiles. AWS Truepower used proprietary software and weather models.

52. With respect to the hourly energy profile for generation in western Kansas which you provided to Mr. Moland (Moland direct testimony, p. 4 lines 20-22), to the extent not provided in response to the previous items in these data requests please list the manufacturer of the wind turbine used to generate your profile, the specific model of the turbine, and the model version of the turbine.

Response: The profiles are not based on a specific turbine model, but rather a "composite" turbine power curve developed by AWS Truepower and NREL. The composite turbine power curve is designed to be representative of the different modern wind turbines likely to be installed at a site.

53. With respect to the hourly energy profile for generation in western Kansas which you provided to Mr. Moland (Moland direct testimony, p. 4 lines 20-22), please state the

person or persons who were directly responsible for developing that energy profile, and by whom they were employed.

Response: To the knowledge of Mr. Berry, the individual site profiles were generated by employees of AWS Truepower, with oversight provided by the National Renewable Energy Laboratory.

54. With respect to the hourly energy profile for generation in western Kansas which you provided to Mr. Moland (Moland direct testimony, p. 4 lines 20-22), what was the average wind generation as a percent of nameplate rating for the Kansas wind generators at the time of the peak load in Missouri for each day of the year?

Response: Grain Belt Express has not performed the data analysis necessary to respond to the question, and therefore cannot answer.

55. If the answer to the preceding item is not available, what was the average wind generation as a percent of nameplate rating for those generators at the time of the peak load on the Ameren Missouri system for each day of the year?

Response: Grain Belt Express has not performed the data analysis necessary to respond to the question, and therefore cannot answer.

56. Please provide the total wind integration cost estimated by Grain Belt or Clean Line for injecting 500 MW of energy at the Missouri interconnection, assuming the base case projection by Grain Belt or Clean Line for the capacity factor and other operating characteristics of the production from the Kansas wind farms.

Response: Grain Belt Express has not prepared an estimate of the total wind integration cost for the injection of 500 MW of wind energy at the Missouri interconnection point. However, the additional variability introduced is small. See Staff Data Request 04, a copy of which is attached to MLA Data Request 56.

57. In your analyses of the estimated costs and benefits of the Project, what entity do you assume will be responsible for providing forecasts of the output from the wind farms to the control area where the wind energy is injected?

Response: In both MISO and PJM, wind forecasting is done by the RTO itself, in coordination with their economic dispatch protocols. However, this assumption is not a significant factor regarding the analysis of costs and benefits because the cost of forecasting is minimal.

58. What have you assumed to be the annual cost of providing the forecasts referenced in the preceding item.

Response: Grain Belt Express has no responsive information on the cost to MISO and PJM of their wind forecasting programs. However, Mr. Berry's experience is that