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

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

Grain Belt Express Clean Line LLC, pursuant to the Commission's June 18, 2014 Order Setting Procedural Schedule, files these Proposed Findings of Fact and Conclusions of Law.

I. FINDINGS OF FACT

A. Grain Belt Express and Clean Line Energy Partners.

1. Grain Belt Express Clean Line LLC ("Grain Belt Express" or "Company") is a limited liability company organized under the laws of the State of Indiana. See Ex. 100 at 3 (Skelly Direct). Grain Belt Express is qualified to conduct business in the State of Missouri for the purpose of carrying on any lawful business purpose allowed under Missouri law, which includes constructing, owning, operating, managing and maintaining electric transmission facilities. See Ex. 100 at 3 (Skelly Direct); Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity at Ex. 1.

2. Grain Belt Express is a wholly owned subsidiary of Grain Belt Express Holding LLC, a Delaware limited liability company, which is a wholly owned subsidiary of Clean Line Energy Partners LLC ("Clean Line"), a Delaware limited liability company. See Ex. 100 at 3 (Skelly Direct).

3. The owners of Clean Line are GridAmerica Holdings Inc. ("GridAmerica"), Clean Line Investor Corp., Michael Zilkha, and Clean Line Investment LLC. See Ex. 100 at 8 (Skelly Direct).

4. GridAmerica is a subsidiary of National Grid USA, which is a subsidiary of National Grid plc. See Ex. 100 at 8 (Skelly Direct). National Grid plc and its affiliates (collectively, "National Grid") are one of the largest investor-owned utility companies in the world and have extensive experience building, owning, and operating transmission networks in the United States and the United Kingdom. See Ex. 100 at 9 (Skelly Direct).

5. National Grid USA delivers electricity to approximately 3.4 million customers in Massachusetts, New York, and Rhode Island. See Ex. 100 at 8 (Skelly Direct).

6. National Grid owns and operates approximately 8,600 miles of high voltage transmission facilities spanning upstate New York, Massachusetts, New Hampshire, Rhode Island and Vermont, including approximately 105 miles of underground cable and 521 substations. See Ex. 100 at 9 (Skelly Direct).

7. National Grid plc is based in the United Kingdom and is one of the largest investor-owned energy companies in the world with approximately $87 billion in assets and over $24 billion in annual revenues. See Ex. 100 at 9 (Skelly Direct).

8. National Grid built, operates and owns a majority share of the U.S. portion of a 2,000MW high-voltage, direct current ("HVDC") interconnector that operates at 450kV between New England and Canada. See Ex. 103 at 3 (Blazewicz Surrebuttal).

9. National Grid owns half of BritNed Link, a 156-mile, bi-pole HVDC electricity interconnector with 1,000MW capacity each way that connects the Isle of Grain, UK to Massvlakte, Netherlands. See Ex. 103 at 3 (Blazewicz Surrebuttal).

10. National Grid jointly owns and operates Interconnexion France-Angleterre, a 2,000MW, 42-mile HVDC interconnector between England and France that includes 27 miles of undersea cable. See Ex. 103 at 4 (Blazewicz Surrebuttal).

11. National Grid and Scottish Power Transmission are jointly developing the Western HVDC Link, which is a 250-mile, 600kV, 2,200MW subsea HVDC cable on the western side of the UK that will connect Scotland with England and Wales. See Ex. 103 at 4 (Blazewicz Surrebuttal). The commercial operation date for this project is 2016. See Ex. 103 at 4 (Blazewicz Surrebuttal).

12. National Grid is currently working with the transmission service operators in Belgium and Norway to develop a 450-mile, 1,000-1,500MW HVDC electricity interconnector between those countries and Great Britain, with a projected commercial operation date of 2018 or 2019. See Ex. 103 at 4 (Blazewicz Surrebuttal).

13. National Grid made a $48.2 million equity investment in Clean Line in exchange for an ownership interest of approximately 40%. See Ex. 103 at 5 (Blazewicz Surrebuttal).

14. National Grid has the right to designate two out of five members of Clean Line's Board of Directors, and has observer rights to make National Grid specialists available to provide input and feedback to Clean Line management. See Ex. 103 at 5 (Blazewicz Surrebuttal).

15. National Grid has made, and continues to make, available to Clean Line its engineering, procurement, licensing, operations, safety, construction, and project management skills and resources in HVDC transmission as Clean Line pursues the development of its projects, including the Grain Belt Express Clean Line Project ("Grain Belt Express Project" or "Project"). See Ex. 103 at 5 (Blazewicz Surrebuttal).

16. Clean Line Investor Corp. is a subsidiary of ZAM Ventures, LP ("ZAM Ventures"). ZAM Ventures is the principal investment vehicle for ZBI Ventures, LLC ("ZBI Ventures"). See Ex. 100 at 8-9 (Skelly Direct).

17. ZBI Ventures focuses on long-term investments in the energy sector, and has invested in several private conventional and unconventional oil and gas investments in the United States, Canada, and elsewhere. See Ex. 100 at 9 (Skelly Direct).

18. ZBI Ventures has made several investments in alternative energy companies. See Ex. 100 at 9 (Skelly Direct).

19. Michael Zilkha and his family have a proven track record of making successful and productive investments in the energy industry, including being the primary investor in Horizon Wind Energy LLC during its early growth. See Ex. 100 at 9 (Skelly Direct).

20. Clean Line Investment LLC is a vehicle for service providers and employees to invest in Clean Line, and is a small, minority shareholder in Clean Line. See Ex. 100 at 9 (Skelly Direct).

21. Clean Line and its subsidiaries are presently developing three other HVDC transmission projects and one alternating current ("AC") transmission project that will connect wind generation resources to other load and population centers: (1) Plains and Eastern Clean Line transmission project, an approximately 720-mile HVDC transmission line that will deliver up to 3,500 MW of electricity; (2) Centennial West Clean Line transmission project, an approximately 900-mile HVDC transmission line that will deliver up to 3,500 MW of electricity; (3) Rock Island Clean Line transmission project, an approximately 500-mile HVDC transmission line that will deliver up to 3,500 MW of electricity; (4) Western Spirit Clean Line transmission

project, an approximately 200-mile AC transmission line that will deliver up to 1,500 MW of electricity. See Ex. 100 at 9-10 (Skelly Direct).

22. The management team of Grain Belt Express has extensive experience developing, constructing and operating a variety of energy infrastructure projects.

23. The Kansas Corporation Commission ("KCC") granted Grain Belt Express public utility status on December 7, 2011 in Docket No. 11-GBEE-624-COC, and a siting permit on November 7, 2013 authorizing it to construct the 370-mile Kansas portion of the Project in Docket No. 13-GBEE-803-MIS.

24. The Indiana Utility Regulatory Commission granted Grain Belt Express public utility status on May 23, 2013 in Cause No. 44264, authorizing the Company to construct and operate the Project in Indiana. The Federal Energy Regulatory Commission ("FERC") conditionally authorized the Company to charge negotiated rates for transmission rights on the Project and granted waivers of certain requirements in Docket No. 14-409-000 on May 8, 2014.

B. The Project.

25. The Grain Belt Express Project is an approximately 750-mile, overhead, multi-terminal +600 kilovolt ("kV") high-voltage, direct current ("HVDC") transmission line and associated facilities. See Ex. 100 at 8 (Skelly Direct).

26. The Project will extend approximately 370 miles from near Dodge City, Kansas to the Kansas-Missouri border where it will cross the Missouri River and continue approximately 206 miles in Missouri. See Ex. 111 at 4 (Galli Direct); Ex. 100 at 3-4 (Skelly Direct). It will then proceed approximately 200 miles in Illinois, where it will interconnect with the Sullivan 765 kV substation in southwestern Indiana, near the Illinois/Indiana border, respectively. See Ex. 111 at 4 (Galli Direct)

27. The Project will have three converter stations. See Ex. 111 at 5 (Galli Direct). One converter station will be located in western Kansas, where wind generating facilities will connect to the Project via AC lines. See Ex. 111 at 4 (Galli Direct). The two other converter stations in eastern Missouri and eastern Illinois, will deliver electricity to the AC grid through interconnections with transmission owners in the systems of Midcontinent Independent System Operator, Inc. ("MISO") and PJM Interconnection, LLC ("PJM"). See Ex. 111 at 4 (Galli Direct).

28. The Missouri portion of the Project encompasses:

(a) Approximately 206 miles of an HVDC transmission line ("HVDC Line") that will cross the Missouri River south of St. Joseph and continue across the state in an easterly direction to south of Hannibal in Ralls County, where the line will cross the Mississippi River into Illinois, and

(b) An associated converter station and AC interconnecting facilities in Ralls County (collectively, with the HVDC Line, the "Missouri Facilities"). See Sched. TBG-2 (Gaul Direct).

29. The Project will offer point-to-point transmission service from its western converter station in Ford County, Kansas to its two points of interconnection located in Missouri and at the Illinois/Indiana border. See Ex. 111 at 4 (Galli Direct).

30. In Missouri, the Project will interconnect with the Ameren Missouri system along an AC transmission line connecting the Maywood 345 kV substation and the Montgomery 345 kV substation. See Ex. 111 at 4 (Galli Direct).

31. The connection will be made via a single 345 kV circuit from the converter station to a nearby tap point along the transmission line connecting Maywood to the Montgomery 345 kV substation. See Ex. 111 at 5 (Galli Direct).

32. This Missouri interconnection will allow the delivery of up to 500 megawatts ("MW") of power into the MISO energy market. See Ex. 111 at 4 (Galli Direct).

33. This interconnection will be constructed in accordance with the requirements set forth in the National Electrical Safety Code ("NESC") following the completion of MISO's interconnection studies. See Ex. 113 at 29-30 (Galli Surrebuttal).

34. In Indiana, the Project will interconnect with the Indiana Michigan Power system, a subsidiary of American Electric Power Company, at the Sullivan substation located near the Illinois/Indiana border. See Ex. 111 at 4 (Galli Direct).

35. This final point of interconnection will provide direct access to the 765 kV network in PJM via two 345/765 kV transformers in AEP's Sullivan 765 kV substation. See Ex. 111 at 4 (Galli Direct).

36. This interconnection point will enable the delivery of up to 3,500 MW of power into the PJM energy market. See Ex. 111 at 4 (Galli Direct).

37. Grain Belt Express will request that PJM exercise functional control over the Project. See Ex. 113 at 23 (Galli Surrebuttal).

38. Construction of the Project is scheduled to begin as early as 2016 with completion projected to occur as early as 2018. See Ex. 111 at 17 (Galli Direct).

39. Grain Belt has secured the services of POWER Engineers, Inc. ("POWER") to serve the role of consulting engineer. See Ex. 111 at 17 (Galli Direct).

40. POWER is an experienced engineering consulting firm founded in 1976. See Ex. 111 at 17 (Galli Direct).

41. POWER has been providing the Company advice and assistance in both the design and constructability analysis of the Project. See Ex. 111 at 7 (Galli Direct).

42. The Company and POWER have identified three primary types of tower structures for the Project: traditional self-supporting lattice structures, tubular steel "monopole" structures, and self-supporting lattice mast structures. See Ex. 111 at 7 (Galli Direct).

43. Other lattice structure types, such as guyed "vee" and guyed lattice mast structures, have also been identified in the preliminary engineering performed by POWER as being suitable structures. See Ex. 111 at 7 (Galli Direct).

44. The structure chosen will be based on specific conditions at particular locations or in particular segments of the Project. See Ex. 111 at 7 (Galli Direct).

45. The current designs for lattice towers and tubular steel monopoles allow for up to 1,500-foot spans for lattice towers and up to 1,200-foot spans for tubular steel monopoles or self-supporting lattice mast structures. See Ex. 111 at 8 (Galli Direct).

46. There will typically be four lattice structures per mile or five tubular steel monopoles or lattice masts per mile. See Ex. 111 at 8 (Galli Direct).

47. Most structures will be between 110 to 150 feet tall, with taller structures likely required at river crossings and in certain other situations where longer span lengths are required. See Ex. 111, Sched. AWG-2 at 2-3 (Galli Direct).

48. The Missouri converter station will occupy a site of approximately 47 acres in Ralls County. See Ex. 102 at 19 & Sched. MOL-14 (Lawlor Surrebuttal).

C. High Voltage Direct Current ("HVDC") Technology.

49. The HVDC technology of the Project is the most cost-effective and efficient way to move large amounts of renewable energy over distances longer than 300 miles. See Ex. 111 at 6 (Galli Direct).

50. HVDC lines can transfer significantly more power with lower line losses over long distances than comparable AC lines. HVDC lines also complement AC networks without contributing to short-circuit current power or additional reactive power requirements. See Ex. 111 at 6 (Galli Direct).

51. HVDC lines can dampen power oscillations in an AC grid through fast modulation of the AC-to-DC converter stations, and thus improve system stability. See Ex. 111 at 6 (Galli Direct).

52. HVDC technology gives the operators complete control of energy flows, which makes HVDC particularly well-suited to managing the injection of variable wind generation. See Ex. 111 at 6 (Galli Direct).

53. HVDC lines, unlike AC lines, will not become overloaded by unrelated outages, since the amount of power delivered is strictly limited by the DC converters at each end of the HVDC line, thereby reducing the likelihood that outages will propagate from one region to another. See Ex. 111 at 6 (Galli Direct).

54. HVDC lines utilize narrower rights-of-way, shorter towers and fewer conductors than comparable AC lines, thereby making more efficient use of transmission corridors, minimizing visual and land use impacts, and offering a transmission solution with a lower capital cost per mile. See Ex. 111 at 6 (Galli Direct).

D. Grain Belt Express Has the Proper Financial Resources.

55. Grain Belt Express estimates that the total cost of the Project will be approximately $2.2 billion, with $500 million of this estimate attributable to the portion of the Project to be located in Missouri. See Ex. 100 at 8 (Skelly Direct); Application ¶ 7; Ex. 113 at 8-9 (Galli Surrebuttal). This figure does not include the cost of network upgrades required to interconnect the Project to the electric transmission grid. See Application ¶ 7 & n.3.

56. The Missouri Facilities will not provide retail service to end-use customers and will not be rate-regulated by the Commission. See Ex. 100 at 12 (Skelly Direct).

57. Grain Belt Express has sufficient financial resources to provide the services proposed by the Project as a result of the funding provided by Clean Line and its principal investors, National Grid USA and ZAM Ventures. See Ex. 118 at 5, 37-52 (Berry Direct); Ex. 103 at 8-9 (Blazewicz Surrebuttal); Ex. 120 at 60-63 (Berry Surrebuttal).

58. To date, National Grid has invested $48.2 million in the development of the Clean Line projects, including the Grain Belt Express Project. See Ex. 103 at 5 (Blazewicz Surrebuttal); Tr. 408.

59. The Company will rely on specific revenue contracts with shippers or transmission service customers in order to support the financing of the Grain Belt Express Project. See Ex. 118 at 5 (Berry Direct).

60. Project finance is a proven financing model commonly used for electric generation projects, natural gas pipelines, and electric transmission projects. See Ex. 118 at 5 (Berry Direct). The management of Grain Belt Express and its investors both have substantial experience in project finance and know how to develop the Project to meet the requirements of the capital markets. See Ex. 118 at 5 (Berry Direct).

61. The Project is a merchant, "shipper pays" transmission line whose costs will not be recovered through either the SPP, MISO, or PJM cost allocation processes. See Ex. 118 at 5 (Berry Direct).

62. Thus, no Project costs will be passed through to Missouri ratepayers under a regional transmission tariff paid by load-serving entities or retail ratepayers. See Ex. 118 at 7 (Berry Direct).

63. The initial development of the Project is being financed by equity investors ZAM Ventures and National Grid USA. See Ex. 118 at 37-38 (Berry Direct).

64. Once the Project reaches the point of beginning construction, it will be financed at the project level against the strength of its future, contracted revenues. See Ex. 118 at 37-38 (Berry Direct). Existing investors may make additional investments in the Company or its parent, Clean Line, may seek outside investment capital. See Ex. 118 at 37-38 (Berry Direct).

65. The funding provided by the equity investors will enable the Company to bring the Project to a point of development at which long-term transmission service agreements can be signed with transmission customers and, on the basis of these agreements, project-specific financing arrangements can be entered into with lenders and with equity investors and/or other partners. The additional capital obtained through these financing arrangements will allow Grain Belt Express to construct the Project. See Ex. 118 at 41-42 (Berry Direct).

66. Grain Belt Express will ultimately recover its Project costs by selling transmission service to wind generators and/or load-serving entities ("LSEs") that use the line. See Ex. 118 at 7 (Berry Direct).

67. Wind generators can buy transmission service on the Project, and then sell their output to the MISO and PJM energy markets. Alternatively, wind generators can sell their

output under a power purchase agreement to LSEs in MISO and PJM. See Ex. 118 at 6 (Berry Direct).

68. LSEs can buy capacity on the Project and use this service to move low-cost wind energy purchased from western Kansas to where the energy is needed by electricity customers. See Ex. 118 at 7 (Berry Direct).

69. Transmission service will be sold under a FERC-approved open-access transmission tariff ("OATT") similar to those of SPP, MISO, and PJM. See Ex. 118 at 9 (Berry Direct).

70. The use of project finance is a viable financing mechanism that is commonly used for electric generation projects, natural gas pipelines, and other electric transmission projects. See Ex. 118 at 49 (Berry Direct).

E. The Missouri Route.

71. The Company, in collaboration with the Louis Berger Group, Inc. and POWER, performed extensive public outreach activities in conjunction with preparing the Missouri Route Selection Study ("Routing Study") and determining the Proposed Route of the HVDC Line in Missouri. See Ex. 101 at 3-5 (Lawlor Direct); Ex. 104 at 3-11 & Sched. TBG-2 (Gaul Direct).

72. The Company considered input received through its public outreach, including Community Leader Roundtables and Open Houses, as well as from numerous federal and state agencies, local officials, and community leaders, in the route selection process. See Ex. 101 at 3-5, 10-11 (Lawlor Direct); Ex. 104 at 7 (Gaul Direct).

73. In addition to its active Project website and newsletter mailings to more than 2,800 stakeholders, the Company conducted more than 900 in-person meetings across the Project

area in Missouri, Kansas, Illinois, and Indiana from May 2010 through March 2014. See Ex. 101 at 6-7 (Lawlor Direct).

74. A total of 24 Roundtables were held, with more than 250 participants attending from more than 40 counties. See Ex. 101 at 10 (Lawlor Direct).

75. The Roundtables were held to gather input from the attendees on constraints, opportunities, and other factors that would lead to the most suitable routing options for the Project. See Ex. 101 at 4 (Lawlor Direct). Attendees worked with members of the Routing Team in small working groups to review an aerial map of the county they represented and provide information about sensitive features, planned development, and existing infrastructure in their community, as well as to draw route suggestions on the aerial maps that the Routing Team should consider in the study. See Ex. 104 at 7 (Gaul Direct).

76. Following the Community Leader Roundtables, thirteen Open Houses were conducted to present information about the Project and to gather feedback used to refine the potential routes of the Project. See Ex. 101 at 4, 12-17 (Lawlor Direct).

77. More than 1,200 people attended the Open Houses, at which members of the Routing Team gave attendees a guided presentation about the Project, and at which attendees could locate their property and other features on aerial photography maps of the potential routes and submit written comments. See Ex. 104 at 7-8 (Gaul Direct). The Routing Team assembled and reviewed all input from the Open Houses, refined potential routes to a series of alternative routes, and eventually selected a Proposed Route. See Ex. 104 at 8 (Gaul Direct).

78. Since Grain Belt Express filed its Application, representatives of the Company have held regular meetings in towns across the Project area. See Ex. 102 at 1-2 (Lawlor Surrebuttal). Notice of the meetings was published in local newspapers and the Company's land

agent representatives called landowners to invite them to meetings in their area. See Ex. 102 at 2 (Lawlor Surrebuttal). The Company identified and notified landowners along the proposed route by searching the databases of the recorder of deeds and the tax assessor. See Tr. 268-73.

79. The ultimate proposed route integrates this input from the general public, local officials, and government agencies. See Ex. 104 at 11 (Gaul Direct).

80. The Proposed Route for the Project has a total length of approximately 206 miles and parallels existing linear infrastructure right-of-ways ("ROW") for 28% of its total length. See Ex. 104, Sched. TBG-2, Figure 6.1.

81. After the construction of the Missouri Facilities, each "landowner will retain the ability to continue agricultural production on the entirety of the easement area except for the relatively small footprint of the structures." See Ex. 101 at 21 (Lawlor Direct).

F. Missouri's Need for the Service.

82. Missouri's Renewable Energy Standard ("RES") requirements are set forth in Section 393.1030.1. The RES currently mandates that investor-owned electric utilities provide 5% of their electricity from renewable energy resources. In 2018 that figure rises to 10%, and in 2021 it increases further to 15%.

83. The RES imposes a cost cap specifying that compliance with the RES cannot increase rates paid by Missouri ratepayers by more than 1% in any year.

84. Approximately 9-10 million megawatt hours ("MWh") per year of renewable electricity will be needed by 2021 for Missouri's investor-owned utilities to meet their RES requirements. See Ex. 118 at 12 (Berry Direct).

85. The current renewable energy supply of Missouri's investor-owned utilities is about 4 million MWh per year. See Ex. 118 at 12 (Berry Direct).

86. The Project can supply Missouri with 2.2-2.6 million MWh per year of renewable energy, and is capable of delivering up to 500 MW of power to the grid in Missouri at any one time. See Ex. 118 at 6, 12 (Berry Direct).

87. The need for such resources was recently confirmed by Ameren Missouri's Integrated Resource Plan ("IRP"). Filed with the Commission on October 1, 2014, the IRP includes plans for "[s]ignificantly expanding renewable generation by adding 400 MW of wind power," among other resources. See Ex. 119 at 15 (Berry Surrebuttal); Ex. 137, Ameren 2014 IRP, §10.5.1 at p. 21; Ameren Missouri News release at 2 (Oct. 1, 2014).

88. The RES cost cap of 1% means that utilities cannot purchase renewable energy which is substantially more expensive than energy from other generation resources. See Ex. 118 at 11 (Berry Direct).

89. Table 9.2 of Ameren's 2014 IRP states that if Ameren could add renewable energy resources without increasing rates above the 1% cost cap, the company would need 1,003 MW of "New Wind" generation for the period 2015-2024 in order to meet Missouri RES requirements. See Ex. 147 (second page); Ex. 334 (last page). Therefore, the Ameren IRP indicates that without low-cost renewable energy resources, Ameren will not be able to meet its statutory renewable energy requirements. Id.

90. Missouri cooperative and municipal utilities, who are not subject to the state's RES standards, have increased their purchases of wind generation because it is a cost-effective resource.

(a) Associated Electric Cooperative Inc. ("AECI") has increased its purchases of wind energy since 2012 when renewables provided 10% of its supply. In 2013 wind and hydro power provided 16% of AECI's energy, including 600 MW from wind

resources in Missouri, Kansas and Oklahoma. Noting that "locking in economical, fixed-price wind energy is good for member systems," AECI has stated that its "board and management are open to additional renewable resources that meet the purpose of providing clean, affordable, reliable electricity for members." See Ex. 148, Excerpts from AECI 2013 Annual Report (final page).

(b) City Utilities of Springfield, Columbia Light and Water, and the Missouri Joint Municipal Electric Utility Commission have all purchased renewable energy from wind farms. See Ex. 118 at 26 (Berry Direct).

91. On October 6, 2014, the Columbia City Council adopted a resolution expressing its support for the Grain Belt Express Project as an economically feasible renewable energy option to serve the City's customers and to help the City fulfill its mandate of 15% renewable energy usage by 2017, 25% by 2022, and 30% by 2028. See Ex. 118 at 26 (Berry Direct), Sched. DAB-8. The City Council resolution concluded that "greater access to low-cost renewable energy such as that anticipated to be delivered by the Project serves the public interest." See Ex. 118 at 26 (Berry Direct), Sched. DAB-8.

G. The Cost of Kansas Wind.

92. The Levelized Cost of Energy analysis ("LCOE") presented by Grain Belt Express Project shows that the Project would deliver wind energy at $41/MWh, or $35/MWh when adjusted for capacity value. See Ex. 120 at 20 (Berry Surrebuttal).

93. This was the lowest cost resource option, cheaper than Missouri wind, coal generation, combined-cycle natural gas generation, and solar power. See Ex. 120 at 19-20 (Berry Surrebuttal).

94. An important component of this analysis is the capacity factor of western Kansas wind. Higher wind speeds lead to a higher capacity factor, meaning that the wind generator will run at a higher average percentage of its maximum power output. See Ex. 118 at 16 (Berry Direct). Mr. Berry used a 55% capacity for western Kansas wind, but also ran model sensitivities for 50% and 60% capacity factors. Id., Sched. DAB-3 at 1; Ex. 120 at 29 (Berry Surrebuttal).

95. Mr. Berry ran sensitivities around the presence of the federal production tax credit for wind energy; higher and lower natural gas prices; the future cost of carbon dioxide emissions (if any); the capacity factor of Kansas wind; and the capacity factor of Missouri wind. See Ex. 120 at 19-20 (Berry Surrebuttal).

96. The various combinations of inputs led to 162 different scenarios considered in the LCOE analysis. Across these scenarios, the Grain Belt Express Project delivered energy more cheaply than other resource options in the overwhelming number of cases. See Ex. 120 at 20 (Berry Surrebuttal).

97. In January 2014, the Company completed a Request for Information ("RFI") to wind generators that can supply energy to the Project's converter station in western Kansas. See Ex. 118 at 15 (Berry Direct).

98. The response to the RFI included 14 wind developers developing 26 wind farms totaling more than 13,500 MW. See Ex. 118 at 15 (Berry Direct).

99. The lowest-priced 4000 MW of the RFI's new wind generation averaged 2.0¢/kWh, flat (without escalation), for 25years. See Ex. 119 at 14-15 (Berry Direct).

100. All of these prospective 26 wind farms will be able to buy service on the Project or sell power to load serving entities that purchase service on the Project. See Ex. 118 at 15 (Berry Direct).

101. The Kansas wind generation represented in the RFI responses is not available to customers at present because of a lack of transmission infrastructure. See Ex. 118 at 28 (Berry Direct); Ex. 700 at 3-5 (Goggin Rebuttal); Ex. 701 at 8 (Goggin Surrebuttal); Ex. 725 at 2-3 (Costanza Rebuttal); Ex. 875 at 3-7 (Langley Rebuttal); Ex. 876 at 5-6 (Langley Surrebuttal).

102. In their responses to the RFI, 20 wind projects stated that they need additional transmission capacity from western Kansas to reach larger markets in Missouri and surrounding states. See Ex. 118 at 28 (Berry Direct).

103. In the absence of the Project, most of these wind generators cannot proceed with their wind generation projects. See Ex. 118 at 28 (Berry Direct).

104. Access to this Kansas wind generation will decrease reliance on fossil-fueled power plants, which will reduce emissions of carbon dioxide, sulfur dioxide, nitrogen oxides and mercury, as well as decrease the use of water to cool thermal power plants. See Ex. 118 at 4 (Berry Direct).

105. The Project will deliver approximately 18 million MWh of clean electric energy per year into the PJM and MISO markets. See Ex. 118 at 34 (Berry Direct). To generate this same amount of electricity, non-wind resources economically dispatched in the year 2020 would emit over 9 million tons of carbon dioxide, over 6,000 tons of nitrogen oxide, over 16,000 tons of sulfur dioxide, and over 100 pounds of mercury. See Ex. 118 at 34 (Berry Direct).

H. The Project is Beneficial to Missouri.

108. The Project will provide customers participating in MISO and PJM access to low-cost wind energy, which today cannot be readily accessed by buyers in these power pools. See Ex. 118 at 4, 6, 9-10 (Berry Direct); Ex. 100 at 16-17 (Skelly Direct).

109. The Project reduces wholesale electricity prices in Missouri and throughout MISO and PJM. See Ex. 118 at 4, 29-33 (Berry Direct); Ex. 117 at 5-6 (Cleveland Surrebuttal); Ex. 120 at 6-8 (Berry Surrebuttal).

110. Missouri wholesale electric prices will decrease by an average of $0.11-$0.67/MWh in the year 2019 with the inclusion of the Grain Belt Express Project. See Ex. 117 at 3 & Sched. RC-2 at 1 (Cleveland Surrebuttal).

111. Total Missouri demand cost—the cost for load serving entities to buy electricity to serve their customers—decreases by $11-$69 million in 2019. Total production cost in the Eastern Interconnection (the sum of fuel costs and variable operating costs) decreases by $387-$1,236 million in 2019. See Ex. 117 at 5 & Sched. RC-2 at 1 (Cleveland Surrebuttal). In the Business-as-Usual scenario, the total adjusted production cost savings to Missouri is $2.6 million in 2019. Id., Sched. RC-2 at 3.

112. Lower renewable energy compliance costs and lower wholesale electric prices will both result in decreased costs to end-use electric customers. See Ex. 117 at 5-6 (Cleveland Surrebuttal); Ex. 118 at 29-33 (Berry Direct); Ex. 120 at 6-8 (Berry Surrebuttal); Tr. 1349-50, 1352-53 (Berry).

113. Specifically, the Grain Belt Express Project: (1) reduces total demand costs in Missouri under each of the four future scenarios; (2) lowers LMPs ($/MWh) in Missouri in each of the future scenarios; (3) reduces total variable production costs in the eastern United States

under each of the future scenarios; and (4) reduces emissions of NOx, SOx, CO2, and mercury, and reduces water usage in power generation, in the eastern United States under each of the future scenarios. See Ex. 116 at 11-19 & Sch. GM-2 (Moland Direct).

I. The Project's Effect on the Reliability of the Electric Transmission Network in Missouri.

114. The Project's interconnection with the Ameren Missouri system at the Maywood and Montgomery substations will enhance the reliability of the electric transmission network in Missouri by connecting different parts of the Midwest grid. See Ex. 109 at 2-3, 8-9 & Sch. RMZ-2 (Zavadil Direct).

115. The Project will improve electric reliability and reduce seams issues between regions by enabling new generation sources and providing a major link between MISO, PJM, and the Southwest Power Pool, Inc. ("SPP"). See Ex. 109 at 2-3, 8-9 & Sch. RMZ-2 (Zavadil Direct).

116. Wind energy injection from western Kansas into Missouri will positively impact resource adequacy and electric reliability in the State, based on reduced Loss of Load Expectation ("LOLE") metrics from the addition of the Project. See Ex. 109 at 9 & Sch. RMZ-2 (Zavadil Direct). The average reduction in LOLE is 23%, or a reduction of 0.023 days/year from the assumed baseline of 0.1 days/year. See Ex. 109 at 9 & Sch. RMZ-2 (Zavadil Direct).

117. The Project's wind energy injection in Missouri would have approximately the same reliability benefit as a single medium-sized natural gas power plant. See Ex. 109 at 8 & Sch. RMZ-2 (Zavadil Direct).

118. Grain Belt Express expects to be registered on the North American Electric Reliability Corporation ("NERC") Compliance Registry for the reliability functions of a "Transmission Owner," a "Transmission Operator," and a "Transmission Service Provider"

(depending on the nature of its arrangements with a third party or parties to operate the Project). See Ex. 111 at 9-10 (Galli Direct).

119. Grain Belt Express will be subject to applicable requirements of one or more NERC reliability standards in some or all of the following categories: Resource and Demand Balancing; Communications; Critical Infrastructure Protection; Emergency Preparedness and Operations Procedures; Facilities Design, Connections and Maintenance; Interchange Scheduling and Coordination; Interconnection Reliability Operations and Coordination; Modeling, Data, and Analysis; Personnel Performance, Training, and Qualifications; Protection and Control; Transmission Operations; Transmission Planning; and Voltage and Reactive. See Ex. 111 at 6 (Galli Direct).

120. The RTOs will ensure that the Project is interconnected reliably and there is no reliability detriment from the Project's operation. See Tr. 1651-52 (S. Lange).

121. The Company is required by federal law and regulations to complete the required interconnection studies before it connects to SPP, MISO, and PJM. See generally 19 C.F.R. §35.34 (Reg'l Trans. Orgs.).

122. Grain Belt Express will work with SPP, MISO, and PJM, as well as with Union Electric Company d/b/a Ameren Missouri ("Ameren") and other public utilities, to ensure that the Project will be interconnected to the Missouri portion of the MISO system in a manner that maintains system reliability. See Ex. 112 at 8 (Galli Additional Direct); Tr. 623-25, 629 (Galli).

123. The Company is proceeding with the RTO interconnection process regarding reliability, and will obtain all required reliability studies from SPP, MISO, and PJM, as well as sign all necessary interconnection agreements prior to constructing the Project. See Ex. 111 at 11-16 (Galli Direct).

124. The Company has agreed to file signed interconnection agreements with the Commission before commencing construction of the Project. See Ex. 120, Sched. DAB-14 at 9-10 (Berry Surrebuttal).

125. The Project will not harm grid reliability in Missouri, and, as described in the Direct Testimony of Company witness Robert Zavadil, the Project will improve electric reliability by providing an additional resource to the State. See Ex. 109 at 2-3, 8-9 & Sch. RMZ-2 (Zavadil Direct).

J. The Project's Economic Effect on Missouri.

126. The Project will create an estimated 1,315 Missouri jobs per year during the three-year construction. See Ex. 114 at 11 (Loomis Direct).

127. Labor income will increase by $77.0 million per year for three years. Overall output will increase by $206.0 million per year in Missouri for three years. See Ex. 114 at 3 (Loomis Direct).

128. The ongoing operations and maintenance of the Project will create 70 long-term Missouri jobs and $4.1 million of labor income in Missouri annually. See Ex. 114 at 11 (Loomis Direct). Overall output will increase by $9.2 million annually. See Ex. 114 at 11 (Loomis Direct).

129. The Project will enable an estimated 4,000 MW of wind farms to be built that will result in an additional 1,311 to 3,933 Missouri jobs in manufacturing and associated industries, with earnings estimated to amount to $79.8 million to $239.5 million. See Ex. 114 at 6 (Loomis Direct).

130. In Randolph County alone, local property taxes may exceed $650,000 annually, with 70% going to local school districts, and with similar benefits accruing to the other seven

counties that the Project spans. See Sched. DAB-9 (letters from Randolph County Assessor R. Tregnago), Ex. 120 (Berry Surrebuttal); Section 153.034 (taxation of electric company property).

131. Revenues from income taxes paid by individuals and by corporations in Missouri would total $4.19 million and $280,000, per year, respectively, over the three-year construction period. See Ex. 114 at 4 (Loomis Direct).

132. Sales tax revenues would yield an additional $6.75 million bringing the total tax revenue to $11.22 million over the three-year construction period. See Ex. 114 at 4 (Loomis Direct).

133. Missouri companies will be involved in the construction of the project. The Company has entered into supplier agreements with ABB, Inc. ("ABB") to purchase transformers from its St. Louis facility; with Hubbell Power Systems, Inc. ("Hubbell") to purchase insulators and conductor hardware from its Centralia factory; and with General Cable Industries, Inc. ("General Cable") to purchase conductor manufactured in its Sedalia plant. Today these three facilities employ over 1,000 Missourians. See Ex. 118 at 36-37 (Berry Direct);

134. As part of its agreement with Grain Belt Express, Hubbell Power Systems will expand its Centralia facility and will employ over 50 people to work on the Company's order. In addition, General Cable has agreed to manufacture conductors for the Project using aluminum sourced from Noranda's New Madrid smelter. See Ex. 118 at 36-37 (Berry Direct).

135. Once the transmission line is built and is in operation, individual income tax, corporate income tax, and sales tax receipts resulting from operations and management expenditures are predicted to yield approximately $189,000 per year in Missouri tax receipts. See Ex. 114 at 4 (Loomis Direct).

K. The Project's EMF Fields Do Not Pose a Known Risk to Human Health.

136. The Project will have two distinct sources of electric and magnetic fields ("EMF"): (1) the HVDC Line that will carry DC electricity and (2) the short interconnection lines between the Missouri converter station and the electric grid which will carry AC electricity. See Ex. 108 at 4-6 (Bailey Surrebuttal).

137. The maximum static magnetic field that will be produced by the DC line at full load is just under 900 milligauss ("mG"), far below the 4 million mG level of exposure recommended as the limit for the general public by the International Commission on Non-Ionizing Radiation Protection, an affiliate of the World Health Organization ("WHO"). See Ex. 108 at 15 (Bailey Surrebuttal); Ex. 111 at 21-22 (Galli Direct).

138. The AC fields from the converter equipment are quite low at the boundaries of the converter because AC fields diminish rapidly with distance. See Ex. 108 at 7 (Bailey Surrebuttal).

139. The levels of static (DC) electric and magnetic fields, and extremely low frequency or ELF (AC) electric and magnetic fields associated with the Project pose no known risk to human health. See Ex. 108 at 33-34 (Bailey Surrebuttal).

140. The WHO and other scientific and health agencies have thoroughly considered this issue and have concluded that, on balance, the scientific weight of evidence does not support the conclusion that static and ELF fields cause any long-term adverse health effects. Recent research does not provide evidence to alter this overall conclusion. See Ex. 108 at 34 (Bailey Surrebuttal).

L. Any Impact of the Transmission Line on Property will be Fairly and Appropriately Compensated.

141. The Company will make easement payments to landowners equal to 100% of the fair market fee value of the easement area. See Ex. 101 at 20 (Lawlor Direct). This means that

Grain Belt Express will pay landowners 100% of the value of owning the area covered by the easement, while receiving only limited rights. Landowners can continue to use the easement area for farming and other purposes that do not interfere with transmission line operations. See Tr. 370 (Lawlor).

142. The Company will also make payments to landowners for every structure on the property. See Ex. 101 at 20-21 (Lawlor Direct). The landowner can elect a lump-sum upfront payment or annual payments for as long as the structure is on the easement area. See Ex. 101 at 20-21 (Lawlor Direct); Tr. 374-75. Annual payments will escalate at 2% per year. See Ex. 101 at 20-21 (Lawlor Direct). The Company will also pay for crop damage and will not limit that payment to a certain period of time as is customary in other easements. See Ex. 101 at 21 (Lawlor Direct).; Tr. 375.

143. Appraiser studies do not effectively measure the effect of transmission lines on property values. See Ex. 107 at 3-7 (Priestley Surrebuttal).

144. Instead, hedonic regression models are the preferred method to measure transmission lines' effect on property values because such models "reflect the prices that buyers actually pay, rather than speculation about what buyers might do under hypothesized conditions" and "remove the subjectivity inherent in appraiser paired sales analyses." See Ex. 107 at 3-7 (Priestley Surrebuttal).

145. Research has found not only that the presence of transmission lines does not typically affect the value of agricultural land, but that any impact on valuation tapers off quickly with distance and disappears almost entirely after 200 feet. See Ex. 107 at 12 (Priestley Surrebuttal).

M. GPS and Agricultural Impact Mitigation Policies.

146. Grain Belt Express will employ numerous mitigation strategies to minimize or mitigate the environmental and agricultural impacts of construction of the Project. See Sched. MOL-13 at 2, Ex. 102 (Lawlor Surrebuttal).

147. Grain Belt Express will make extensive efforts to communicate with landowners and to develop construction access plans that seek to minimize the areas where the soil will potentially be compacted due to construction of the Project. See Sched. MOL-13 at 2, Ex. 102 (Lawlor Surrebuttal).

148. Grain Belt Express will use construction matting when needed and will utilize decompaction methods following construction, which will significantly reduce the amount of compaction and effectively remediate any soils that are compacted. See Sched. MOL-13 at 2, Ex. 102 (Lawlor Surrebuttal).

149. Grain Belt Express will implement a Storm Water Pollution Prevention Plan ("SWPPP") to address soil erosion. See Ex. 102 at 15 (Lawlor Surrebuttal).

150. The operation of GPS guidance systems will not be impacted by the Project, and those systems allow for efficient farming practices around obstacles on agricultural fields. See Ex. 106 at 5 (Wesley Surrebuttal); Tr. 759 (Wesley).

II. CONCLUSIONS OF LAW

A. Legal Standard.

1. The Commission has the power to authorize the construction of "electric plant" in Missouri that is "necessary or convenient for the public service." See Section 393.170.3. Pursuant to Section 393.170, the Commission may grant an applicant a "line" CCN under

subsection 1 or an "area" CCN under subsection 2.[1] Grain Belt Express is seeking a line CCN under Section 393.170.1.

2. The CCN Application must be granted if the proposed infrastructure is "necessary or convenient for the public service."[2] Missouri appellate courts have held that necessity does not require that the improvement be "essential" or "absolutely indispensable."[3]

3. If the project "is of sufficient importance to warrant the expense of making it, it is a public necessity."[4] Moreover, if the granting of the authorization provides a "genuine and reasonable public interest in promptness and economy of service," then the public "convenience or necessity" is served.[5]

4. The Commission has stated that it will apply five criteria in CCN cases to determine whether the proposed service is necessary or convenient for the public service, commonly referred to as the Tartan factors: (1) There must be a need for the service the applicant proposes to provide; (2) The applicant's proposal must be economically feasible; (3) The applicant must have the financial ability to provide the service; (4) The applicant must be qualified to provide the proposed service; and (5) The proposed service must be in the public interest.[6] The Project meets each of these standards and is, therefore, necessary or convenient for the public service.

5. In the Tartan case, the Commission described each of the above elements, including that the service must promote the public interest, stating:

> The requirement that an applicant's proposal promote the public interest is in essence a conclusory finding as there is no specific definition of what

[1] See StopAquila.org v. Aquila, Inc., 180 S.W.3d 24, 32-34 (Mo. App. W.D. 2005).
[2] See Section 393.170.3. See also 4 CSR 240-3.105(1)(E).
[3] State ex rel. Intercon Gas, Inc. v. PSC, 848 S.W.2d 593, 597 (Mo. App. W.D. 1993).
[4] State ex rel. Missouri, Kan. & Okla. Coach Lines, Inc. v. PSC, 179 S.W.2d 132, 136 (Mo. App. K.C. 1944).
[5] State ex rel. Twehous Excavating Co. v. PSC, 617 S.W.2d 104, 106 (Mo. App. W.D. 1981).
[6] In re Tartan Energy Co., Report and Order, Case No. GA-94-127, 1994 WL 762882 at 3 (1994).

> constitutes the public interest. Generally speaking, positive findings with respect to the other four standards will in most instances support a finding that an application for a certificate of convenience and necessity will promote the public interest.[7]

6. In a decision approving the CCN application of Ameren for the Callaway-Franks 345-kV transmission line, the Commission described the public in regard to the "public interest" requirement in the following terms:

> Who are "the public"? Concerned Citizens argues that the Commission should not consider the benefits it admits exist for AmerenUE, Associated, or Associated's customers. Concerned Citizens would have the Commission consider only the interests of the affected landowners. However, this argument is contrary to the case law.
>
> In the *Missouri Pacific Freight Transport Company* case, the Court stated that the 'rights of an individual with respect to issuance of a certificate are subservient to the rights of the public …' And, in a case affirming the Commission's grant of a certificate of convenience and necessity to a water utility, the Court in *Public Water Supply District No. 8* stated, 'the ultimate interest is that interest of the public as a whole … and not the potential hardship to individuals ….'
>
> The Commission is also aided by zoning and eminent domain cases where the issue of public interest is often addressed. An examination of those cases in Missouri finds that the determination of public interest is a balancing test between public and private interests. And further, '[n]o one factor is dispositive in balancing public versus private interests. Each case stands on its own facts and circumstances.'
>
> Section 386.610, RSMo, which applies to the Commission's general regulatory power over electric corporations, supports this balancing test approach ....
>
> The Commission must, therefore, balance all the relevant factors, both the benefits and detriments, and determine whether the public benefits of the project outweigh the individual detriments. It is not within the authority of this Commission to determine the monetary value or just compensation for such detriments other than to determine if the costs of the project outweigh the benefits provided by it.[8]

[7] Id. at 10.
[8] In re Union Electric Co., Report and Order, Case No. EO-2002-351, 2003 WL 22017276 at *15 (2003).

7. Accordingly, "the rights of an individual with respect to issuance of a certificate are subservient to the rights of the public."[9] Neither does the effect upon other common carriers outweigh a public necessity, as "an adverse effect upon them yields to a public need for the service."[10]

8. As these cases make clear, the Commission must balance both the benefits and the detriments of the Project[11] so as to ensure that there is no overall detriment to the public.[12] In other words, the term "in the public interest" "can reasonably mean no more than 'not detrimental to the public.'"[13] Consequently, the Commission may not withhold its granting of the authority sought where the benefits of the Project outweigh the individual detriments.[14]

9. The Missouri Facilities are necessary or convenient for the public service. Granting Grain Belt Express a CCN so that it may construct the Missouri portion of the Project "is of sufficient importance to warrant the expense of making it"[15] and it meets the five Tartan criteria set forth above. Accordingly, the public "convenience or necessity" is served.[16]

B. There is a Need for the Service.

10. There is a demonstrated need for the service provided by Grain Belt Express. The open-access transmission service offered by the Company is necessary to meet the requirements of Section 393.1020, the Missouri Renewable Energy Standard ("RES"), as well as the renewable portfolio standard ("RPS") requirements of the other states served by MISO and PJM at a low cost.

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[9] State ex rel. Mo. Pac. Freight Transp. Co. v. PSC, 288 S.W.2d 679, 682 (Mo. App. K.C.), aff'd sub nom. State ex rel. Mo. Pac. Freight Transp. Co. v. PSC, 295 S.W.2d 128 (Mo. 1956).
[10] Twehous, 617 S.W.2d at 106.
[11] In re Union Electric Co., 2003 WL 22017276 at *15.
[12] State ex rel. City of St. Louis v. PSC, 73 S.W.2d 393, 400 (Mo. en banc 1934).
[13] City of St. Louis, 73 S.W.2d at 400.
[14] Id. See State ex rel. Fee Fee Trunk Sewer, Inc. v. Litz, 596 S.W.2d 466, 468 (Mo. App. E.D. 1980).
[15] State ex rel. Mo., Kan. & Okla. Coach Lines, Inc. v. PSC, 179 S.W.2d 132, 136 (Mo. App. K.C. 1944).
[16] State ex rel. Mo., Kan. & Okla. Coach Lines, 179 S.W.2d at 136; Twehous, 617 S.W.2d at 106.

11. Missouri's RES requirements are set forth in Section 393.1030.1. It currently mandates that investor-owned electric utilities provide 5% of their electricity from renewable energy resources. However, in 2018 that figure rises to 10%, and in 2021 it increases further to 15%.

12. Based on information from the U.S. Energy Information Administration and utility compliance reports, approximately 9-10 million megawatt hours ("MWh") per year of renewable electricity will be needed by 2021 for Missouri's investor-owned utilities to meet their RES requirements. See Ex. 118 at 12 (Berry Direct). Because the current renewable energy supply of these utilities is only about 4 million MWh per year, they must procure approximately 5-6 million MWh per year of additional renewable energy to meet the 2021 requirement. Id. The Grain Belt Express Project can supply Missouri with 2.2-2.6 million MWh per year of such energy, delivering up to 500 MW of power to the grid in Missouri at its Ralls County converter station. Id. at 6, 12.

13. The need for such resources was recently confirmed by Ameren Missouri's Integrated Resource Plan ("IRP"). Filed with the Commission on October 1, 2014, the IRP includes plans for "[s]ignificantly expanding renewable generation by adding 400 MW of wind power," among other resources. See Ex. 119 at 15 (Berry Surrebuttal); Ex. 137, Ameren 2014 IRP, §10.5.1 at p. 21; Ameren Missouri News release at 2 (Oct. 1, 2014).

14. Ameren's demand for renewable energy would be even higher if renewable energy resources could be added without increasing electric rates. The RES imposes a cost cap such that compliance with the RES cannot increase rates paid by Missouri ratepayers by more than 1% in a year. This means that renewable energy cannot be substantially more expensive than energy from other generation resources. See Ex. 118 at 11 (Berry Direct). Table 9.2 of

Ameren's 2014 IRP stated that if Ameren could add renewable energy resources without increasing rates up to the 1% statutory limit, it would need 1,003 MW of "New Wind" generation for the period 2015-2024 to meet the RES requirements. See Ex. 147 (second page); Ex. 334 (last page). Ameren's latest IRP therefore indicated that without lower-cost renewable energy resources, Ameren will not be able to meet its statutory renewable energy requirements. Mr. Berry explained that given the low cost of wind energy generated in western Kansas, the Grain Belt Express Project would be in a position to supply this need without exceeding the rate cap. See Tr. 1352-53.

15. Missouri cooperative and municipal utilities, who are not subject to the state's RES standards, are also increasing their purchases of wind generation because it is a cost-effective resource. Associated Electric Cooperative Inc. ("AECI") has increased its purchase of wind energy. In 2013 wind and hydro power provided 16% of AECI's energy, including 600 MW from wind resources in Missouri, Kansas and Oklahoma. Noting that "locking in economical, fixed-price wind energy is good for member systems," AECI has stated that its "board and management are open to additional renewable resources that meet the purpose of providing clean, affordable, reliable electricity for members." See Ex. 148, Excerpts from AECI 2013 Annual Report (final page). In addition to AECI, City Utilities of Springfield, Columbia Light and Water, and the Missouri Joint Municipal Electric Utility Commission have all purchased renewable energy from wind farms. See Ex. 118 at 26 (Berry Direct).

16. On October 6, 2014, the Columbia City Council adopted a resolution expressing its support for the Grain Belt Express Project as an economically feasible renewable energy option to serve the City's customers and to help the City fulfill its mandate of 15% renewable energy usage by 2017, 25% by 2022, and 30% by 2028. Id., Sched. DAB-8. The City Council

resolution concluded that "greater access to low-cost renewable energy such as that anticipated to be delivered by the Project serves the public interest." Id.

17. Beyond the Missouri RES requirements, current and proposed regulations from the U.S. Environmental Protection Agency pose increasing risks for all of Missouri's utilities. The Mercury and Air Toxics Standards, the Cross-State Air Pollution Rule, and the Clean Power Plan to reduce greenhouse gasses present continuing and new challenges likely to increase the cost of fossil-fueled generation. Id. at 35; Ex. 120 at15 (Berry Surrebuttal). The Clean Power Plan, proposed under Section 111(d) of the Clean Air Act, would require Missouri as a whole to cut its carbon emissions rate by about 23% in the electric sector. See Ex. 120 at 15. Given these current and proposed restrictions, Staff witness Daniel Beck made clear that the Grain Belt Express Project "would certainly be one alternative" for Missouri utilities to use in mitigating such environmental compliance risks. See Tr. 1723 (Beck).

18. The need for low-cost renewable energy extends throughout the footprint of states served by the Project. Using the statutory renewable energy requirements or goals and applying them to the load forecasts from the U.S. Energy Information Administration, Mr. Berry estimated that the demand for renewable energy from states in the MISO and PJM regions will be 111.8 million MWh in 2015, 175.0 million MWh in 2020, and 222.5 million MWh in 2025. See Ex. 118 at 23-24 (Berry Direct). In contrast, total renewable energy generation in the MISO and PJM states during 2013 was about 80 million MWh. Id. at 24. The current level of supply in the MISO and PJM states falls far short of the projected demand over the next 11 years, based on state RPS requirements and renewable energy goals. Id. This shortfall underscores the need for new transmission infrastructure like the Project to enable low-cost wind energy. Id. at 23-24. Because renewable energy and electricity markets are regional in nature, Missouri has a strong

interest in other states having adequate resources available to meet their state RPS goals. Id. at 22-23. Shortfalls of renewable energy resources to meet RPS requirements in other states will tend to increase prices throughout the region and therefore increase the cost of meeting the portfolio standard mandated by Missouri's RES requirement. Id.

19. Many wind generators stand ready to supply the Project with low-cost wind power but need the Company's transmission service to construct their projects. Grain Belt Express conducted a Request for Information ("RFI") on wind generators in the region of western Kansas. Fourteen wind developers responded, and together are advancing 26 wind projects totaling over 13,500 MW. Without the Project, it is doubtful that these proposed wind farms in western Kansas would be built to serve the need for low-cost renewable energy in Missouri and elsewhere in the region. See Ex. 876 (Langley Surrebuttal) at 5-6; Ex. 875 (Langley Rebuttal) at 3-7; Ex. 725 at 2-3 (Costanza Rebuttal); Ex. 700 (Goggin Rebuttal) at 3-7; Ex. 701 (Goggin Surrebuttal) at 7-8.

20. During the evidentiary hearing, Mr. Langley testified that Infinity Wind is planning to develop over 2,000 MW of wind power to meet the need for low-cost, wind generation in Missouri and other states. See Tr. 883-84, 887-88. However, Infinity Wind would be unlikely to carry out its plans as currently designed if the Grain Belt Express Project were not approved by this Commission because of the current inadequate state of transmission infrastructure and the risk of significant curtailments. See Tr. 895-98.

21. Mr. Goggin of the American Wind Energy Association testified that there is a need for wind energy in Missouri, as well as other states in MISO and PJM. See Ex. 700 at 3-5 (Goggin Direct). There "is no viable alternative other than new transmission for delivering the high-quality wind resources in areas to the west of Missouri to Missouri and other points

eastward." See Ex. 701 at 8 (Goggin Surrebuttal). At the evidentiary hearing, he explained that the costs of transmission congestion and curtailments in the northwest MISO region "are very significant" and "increase the price of the renewables that are available …." See Tr. 946-47. Noting that "transmission congestion and wind curtailment impose a major economic cost on wind developers and utilities purchasing wind energy," Mr. Goggin concluded that the development of wind generation in northwestern MISO or other areas "is not a viable alternative to the construction of" the Grain Belt Express Project. See Ex. 701 at 8 (Goggin Surrebuttal).

22. The transmission service offered by the Company is necessary to meet the requirements of the Missouri RES, as well as the RPS requirements of the other states served by MISO and PJM, as described in Section F of the Findings of Fact, and in light of the current and proposed regulations from the U.S. Environmental Protection Agency.

23. As discussed in the next subsection, wind power delivered by the Project will be cheaper than other new sources of generation, and therefore meets Missouri's need for low-cost electrical generation. Furthermore, the evidence shows that while there is a need for low-cost wind generation in Missouri and other states, there is no adequate transmission infrastructure to meet that need. Because wind developers cannot develop wind projects without transmission infrastructure, there is a need for this Project.

C. **The Project is Economically Feasible.**

24. Because it will link untapped, low-cost wind resources in western Kansas with the demand for renewable energy in Missouri and other states, the Project is economically feasible. This is particularly true given that the Company and its investors bear all risk associated with recovering the costs of the Project, which is the specific test the Commission applied in the

Tartan case to determine that the project under review was economically feasible.[17] See Tr. 1297-98. Using the ordinary meaning of the word, the concept of feasibility simply means "capable of being done" or "achievable."[18]

25. The evidence before the Commission shows that the cost to bring wind energy from western Kansas to Missouri and states farther east via the Project is the lowest cost solution when compared with wind generation from other states, building natural gas generation, and other resource options. The analysis provided by David Berry, Clean Line's Executive Vice President of Strategy and Finance, concluded that the Project was economically feasible. His findings were validated by witnesses from independent wind generators, the American Wind Energy Association, and by National Grid, one of the largest public utilities in the world. Further, the analysis of Show-Me's Dr. Michael Proctor, when corrected for errors, confirms Mr. Berry's conclusion regarding the economic feasibility of the Project.

26. The Levelized Cost of Energy analysis ("LCOE") presented by Mr. Berry indicated that the Grain Belt Express Project would deliver wind energy at $41/MWh, or $35/MWh when adjusted for capacity value. See Ex. 120 at 20 (Berry Surrebuttal). This was the lowest cost resource option, cheaper than Missouri wind, coal generation, combined cycle gas, and solar power. To test his finding, Mr. Berry ran sensitivities around the presence of the federal production tax credit for wind energy; higher and lower natural gas prices; the future cost of carbon dioxide emissions; the capacity factor of Kansas wind; and the capacity factor of Missouri wind. The various combinations of inputs led to 162 different scenarios considered in

[17] In re Tartan Energy Co., Report and Order, Case No. GA-94-127, 1994 WL 762882 at 10 (1994) (finding that Tartan's proposal "represents a viable project" as "Tartan bears most of the risk if it has underestimated the economic feasibility of its project").

[18] American Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490, 508 (1981) (citing the plain meaning of the word "feasible" in rejecting imputation of a higher standard). See also Occ. Safety & Health L. § 4:28 (2013 ed.).

the LCOE analysis. Across these scenarios, the Grain Belt Express Project delivered energy more cheaply than other resource options in the overwhelming number of cases. Id.[19]

27. The extremely competitive cost to produce wind energy in western Kansas is the most significant factor in Mr. Berry's LCOE at 2.0-2.5¢/kWh ($20-25/MWh). The cost to produce this wind energy is among the lowest in the United States, which was confirmed by the RFI that Grain Best Express completed in January 2014. The response to the RFI came from 14 wind developers proposing to develop 26 wind farms with a total of over 13,500 MW. The lowest-priced 4000 MW of new wind generation averaged 2.0¢/kWh, flat (without escalation), for twenty-five years. See Ex. 119 at 14-15 (Berry Direct).

28. Infinity Wind's Matt Langley testified at the hearing that the cost of this "extremely cheap wind power" was likely even lower, ranging from 1.5 to 2.0¢/kWh, with a total delivered price of 4.0¢/kWh. See Tr. 900. National Grid's Stanley Blazewicz confirmed that customers of the Project would be looking at a delivered price of 4.0-4.5¢/kWh, "a very competitive price for wind generation." See Tr. 423.

29. An important component of this analysis is the capacity factor of western Kansas wind. Higher wind speeds lead to a higher capacity factor, meaning that the wind generator will run at a higher average percentage of its maximum power output. See Ex. 118 at 16 (Berry Direct). Mr. Berry used a 55% capacity for western Kansas wind, but also ran model sensitivities for 50% and 60% capacity factors. Id., Sched. DAB-3 at 1; Ex. 120 at 29 (Berry Surrebuttal). During the evidentiary hearing, there was much testimony regarding the reasonableness of the 55% capacity factor. Both Mr. Langley and Mr. Goggin testified that 55% was a reasonable assumption, given the advances in wind turbine technology and the robust wind

[19] When the Project's capacity value is not considered, it would deliver energy at a cost of $41/MWh, cheaper than Missouri wind at $55/MWh or a combined cycle gas plant at $96/MWh. See Ex. 120 at 20 (Berry Surrebuttal).

of Western Kansas. See Tr. 892-93 (Langley: "safe bet" that 55% capacity factor is "likely to increase"); 976 (Goggin: 55% "not unreasonable" given "significant improvements in wind turbine technologies").

30. In response to Commissioner questions about whether the Grain Belt Express Project, "with the science, with the technology, with the economics," is "the best economically feasible project," Mr. Langley stated: "We believe that to be the case, yes." See Tr. 898.

D. Grain Belt Express Has the Proper Financial Resources.

31. Grain Belt Express has sufficient financial resources to provide the services proposed by the Project as a result of the funding provided by Clean Lean and its principal investors, National Grid USA and ZAM Ventures. See Ex. 118 at 5, 37-52 (Berry Direct); Ex. 103 at 8-9 (Blazewicz Surrebuttal); Ex. 120 at 60-63 (Berry Surrebuttal).

32. The Company will rely on specific revenue contracts with shippers or transmission service customers in order to support the financing of the Grain Belt Express Project. Project finance is a proven financing model commonly used for electric generation projects, natural gas pipelines, and electric transmission projects. See Ex. 118 at 5 (Berry Direct). The management of Grain Belt Express and its investors both have substantial experience in project finance and know how to develop the Project to meet the requirements of the capital markets. Id. at 5.

33. To date, National Grid has invested $48.2 million in the development of the Clean Line projects, including the Grain Belt Express Project. See Ex. 103 at 5 (Blazewicz Surrebuttal); Tr. 408. Based on National Grid's analysis of Clean Line's model of providing wind energy over HVDC transmission lines on a participant-funded basis, National Grid has

continued to support Clean Line because "we think that these are economically viable projects." Id. at 445.

34. Clean Line's other major supporter is ZAM Ventures, a principal investment vehicle of ZBI Ventures, LLC which focuses on long-term investments in the energy sector and is owned by Ziff Brothers Investments, LLC. See Ex. 118 at 38 (Berry Direct); Ex. 204 at 5-6 (Murray Rebuttal). ZAM Ventures has made a comparable investment in Clean Line. See Ex. 204 at 5 (Murray Rebuttal). National Grid and ZAM Ventures each hold two seats on the Clean Line board of directors. See Tr. 1154 (Berry).

35. Staff's Utility Regulatory Manager of Financial Analysis David Murray stated that Grain Belt Express has the financial qualifications to be granted a CCN for the Missouri Facilities. See Ex. 204 at 3, 7 (Murray Rebuttal). At the evidentiary hearing, he confirmed that that Company had agreed to Staff's conditions that it will not begin to install transmission facilities on easement property until it has demonstrated through a Commission filing that: (1) it has obtained commitments for funds in an amount equal to or greater than the Project costs, and (2) the contracted transmission service revenue is sufficient to service the debt financing of the Project, taking into account any planned refinancing of debt. See Tr. 1431 (Murray); Ex. 120 at 54-55 & Sched. DAB-14 at 5-6, 13 (Berry Surrebuttal). Mr. Murray withdrew his recommendation regarding ZAM Ventures providing a guaranty for its investment, based upon testimony given by Mr. Berry regarding the different investment rights of National Grid and ZAM Ventures. See Tr. 1430-31; 1151-55 (Berry).

36. Given the financial backing of the Project, the viability and historical success of the project finance model, the experience of Clean Line and its investors' management, and particularly the commitment by National Grid USA to support the transmission projects

proposed by Clean Line, Grain Belt Express has the financial ability to provide the proposed transmission service.

E. Grain Belt Express is Qualified to Provide the Service.

37. Grain Belt Express is qualified to provide the service it is offering. The management team of the Company has extensive experience developing, constructing and operating a variety of transmission and other energy infrastructure projects.

38. Clean Line Chief Executive Officer Michael Skelly leads an experienced team of senior executives with transmission and wind development experience. Mr. Skelly served as Chief Development Officer of Horizon Wind Energy, and oversaw the development of over 2,600 MW of wind generation projects. See Ex. 100, Sched. MPS-1 (Skelly Direct). During his tenure at Horizon, that company developed and completed more than a dozen wind energy projects, with a portfolio of more than 10,000 MW in over a dozen states. Dr. Wayne Galli serves as Executive Vice President of Transmission and Technical Services for Clean Line. A professional engineer, Dr. Galli served as Director of Transmission Development for NextEra Energy Resources where he focused on the development of high-voltage direct current transmission lines in Texas. Before that, he was Supervisor of Operations Engineering at Southwest Power Pool, where he was responsible for the real-time and short-term engineering support of SPP's grid operations. See Ex. 111 at 2-3 (Galli Direct).

39. Other senior members of management include David Berry, Executive Vice President for Strategy and Finance, and Jayshree Desai, Executive Vice President, who both served in senior positions at Horizon Wind Energy. See Ex. 100, Sched. MPS-1 at 2 (Skelly Direct); Ex. 118 at 1-2 (Berry Direct).

40. No party has raised any specific concerns about Grain Belt Express and Clean Line's ability to construct, own, operate, control, manage, and maintain the Missouri Facilities. Staff "is not questioning the qualifications" of the personnel that Clean Line has assembled for the Grain Belt Express project. See Ex. 201 at 10 (Beck Rebuttal). Of the engineering and safety issues raised by Staff, the Company has agreed that it will provide all necessary studies and reports, consistent with established industry standards and best practices, to address those matters as the Project progresses. See Ex. 113 at 2-9 (Galli Surrebuttal). Staff witness Shawn Lange's re-stated condition regarding the RTO interconnection processes and short-circuit ratios is acceptable to the Company. See Tr. 1649-50.

41. Similarly, the studies, reports and testing recommended by Staff, as modified by Pipeline Safety Program Manager Robert Leonberger, are acceptable to Grain Belt Express. See Tr. 1700-02; Sched. DAB-14 at 11-12, Ex. 120 (Berry Surrebuttal). Mr. Leonberger advised that he had amended his testimony and no longer proposed specific distances between the Project and nearby infrastructure. He now recommends that an appropriately qualified expert prepare an analysis to determine the distance between metallic underground facilities and the Project's line and converter station. See Tr. 1700-02, 1707-08.

42. The operations of Grain Belt Express are supported by National Grid, which has made and continues to make available to the Company and Clean Line its engineering, procurement, safety, construction, and project management skills and resources. See Ex. 103 at 5, 9 (Blazewicz Surrebuttal). National Grid is one of the most experienced transmission companies in the world, operating both direct current and alternating current high-voltage projects in the United States and Europe. See Tr. 411-12; Ex. 103 at 2-4 (Blazewicz Surrebuttal). It operates a 923-mile HVDC line that stretches from James Bay to Montreal and

Boston. See Tr. 413. Around the world, National Grid currently has 5 GW of HVDC projects in operation, 2 GW under construction, 1½ GW about to go into construction, and 5 GW in development. See Tr. 444.

43. National Grid "works closely with the Clean Line management to track the progress of all these projects," including the Grain Belt Express Project. See Ex. 103 at 5; Tr. 443, 446. In response to Commissioner questions, Mr. Blazewicz testified that National Grid has no concerns or reservations about either HVDC technology or the economic viability of the Grain Belt Express Project. See Tr. 444-46.

44. Because the Grain Belt Express management team has extensive experience developing, constructing and operating a variety of transmission and other energy infrastructure projects, and is supported by one of the most experienced transmission companies in the world, the Company is qualified to provide the service it is offering.

F. The Project is in the Public Interest.

45. In the Tartan case, the Commission found that the public interest factor "is in essence a conclusory finding as there is no specific definition of what constitutes the public interest."[20] The Commission concluded that "positive findings with respect to the other four standards will in most instances support a finding that an application for a certificate of convenience and necessity will promote the public interest."[21] The Company has shown not only that there is a demonstrated need for the service, that the Project is economically feasible, that it can successfully finance the Project, and that it is qualified to provide the service, but also that the Project provides a variety of benefits that are in the public interest without creating any substantial detriments.

[20] In re Tartan Energy Company, L.C., Report and Order, Case No. GA-94-127, 1994 WL 762882 at 10 (1994).
[21] Id.

i. The Project is Beneficial to Missouri.

46. The Project and its Missouri Facilities will offer Missouri benefits that are both economic and environmental in nature. The Project will provide customers participating in MISO and PJM access to low-cost wind energy, which today cannot be readily accessed by buyers in these power pools. See Ex. 118 at 4, 6, 9-10 (Berry Direct); Ex. 100 at 16-17 (Skelly Direct). The Project enables cost-effective compliance with RES and RPS goals in Missouri and other states in the MISO and PJM regions. See Ex. 118 at 4, 11-18, 22-26 (Berry Direct); Ex. 100 at 5 (Skelly Direct); Ex. 120 at 6-7, 14-15, 70-71 (Berry Surrebuttal); Tr. 1155-56. The wind developers themselves stated the Project is the best way to meet those needs. See Tr. 898, 922 (Langley); Ex. 701 at 8 (Goggin Surrebuttal); Ex. 725 at 3-6 (Costanza Rebuttal). See also Brief of Amicus Curiae Energy for Generations, LLC at 3, 9.

47. The Project is projected to reduce wholesale electricity prices in Missouri and throughout MISO and PJM. See Ex. 118 at 4, 29-33 (Berry Direct); Ex. 117 at 5-6 (Cleveland Surrebuttal); Ex. 120 at 6-8 (Berry Surrebuttal). Lower renewable energy compliance costs and lower wholesale electric prices will both result in decreased costs to end-use electric customers. See Ex. 117 at 5-6 (Cleveland Surrebuttal); Ex. 118 at 29-33 (Berry Direct); Ex. 120 at 6-8 (Berry Surrebuttal); Tr. 1349-50, 1352-53 (Berry). One of the Company's witnesses stated: "Scenarios run under each economic forecast showed positive economic impacts, including lower cost of production, lower demand and less pollution from generation." See Ex. 116 at 10 & Sch. GM-2 (Moland Direct). He concluded that the Grain Belt Express Project: (1) "reduces total demand costs in Missouri under each of the four future scenarios;" (2) "lowers LMPs ($/MWh) in Missouri in each of the future scenarios;" (3) "reduces total variable production costs in the eastern United States under each of the future scenarios;" and (4) "reduces emissions

of NOx, SOx, CO_2, and mercury, and reduces water usage in power generation, in the eastern United States under each of the future scenarios." Id. at 11-19 & Sch. GM-2.

48. By delivering over 18 million MWh of clean energy to Missouri, Illinois, Indiana, and other MISO and PJM states, the Project will reduce the need to generate electricity from fossil-fueled power plants and therefore will reduce carbon dioxide, sulfur dioxide, nitrous oxide and mercury emissions, as well as water usage, resulting in a cleaner environment and lower health risks. See Ex. 118 at 4, 34-35 (Berry Direct); Ex. 116 at 10-11 (Moland Direct); Ex. 117 at 5-6 (Cleveland Surrebuttal). The Project will allow Missouri to access affordable clean energy as increasing environmental regulation drives increased costs for and additional retirements of coal plants. See Ex. 118 at 4, 6, 14, 29, 35 (Berry Direct). In other words, low-cost renewable energy will lower the compliance costs of utilities serving load. See Tr. 1349-50, 1352-53 (Berry).

49. By enabling new generation sources and providing a major link between three RTOs in the Eastern Interconnection, the Project will improve electric reliability and reduce seams issues between regions. See Ex. 118 at 4, 29, 35-36 (Berry Direct); Ex. 111 at 8-16 (Galli Direct); Ex. 109 at 8-9 (Zavadil Direct); Ex. 110 at 2-4 (Zavadil Surrebuttal).

50. The Project will contribute to economic development in Missouri and in the broader region by providing state and local tax revenue; construction, manufacturing and operations jobs; and additional business for Missouri companies. See Ex. 118 at 4, 29, 36-37 (Berry Direct); Ex. 114 at 3-6 (Loomis Direct); Ex. 111 at 17-19 (Galli Direct); Ex. 101 at 8-10 (Lawlor Direct); Ex. 115 at 1-6 (Loomis Surrebuttal); Ex. 120 at 6 (Berry Surrebuttal). Individual income tax, corporate income tax, and sales tax receipts resulting from O&M expenditures on the Missouri Facilities are predicted to yield approximately $189,000 per year in

Missouri tax receipts. See Ex. 114 at 4 (Loomis Direct). In Randolph County local property taxes are projected to exceed $650,000 annually, with 70% going to local school districts. See Sched. DAB-9 (letters from Randolph County Assessor R. Tregnago), Ex. 120 (D. Berry Surrebuttal). Similar benefits should accrue to the other seven counties that the Project spans under Section 153.034.

51. The Missouri portion of the Project is expected to result in 1,315 Missouri jobs per year during its three-year construction, and 70 long-term Missouri jobs during ongoing operations. See Ex. 114 at 11 (Loomis Direct). The study conducted by Company witness Dr. David G. Loomis, Professor of Economics at Illinois State University, estimated that the economic impact of the annual O&M costs of the Missouri Facilities when placed into service, will be 70 jobs and $4.1 million of labor income in Missouri annually. Id. at 4. The Project will enable an estimated 4,000 MW of wind farms to be built that will result in an additional estimated 1,311 to 3,933 Missouri jobs in manufacturing and associated industries. Id. at 6.

52. Dr. Loomis's study properly measured the gross impact of the Project as opposed to the net impact. See Tr. 1508 (Loomis). He explained that it would be "wide open speculation" to measure the net impact of the Project and, in accordance with industry practice, "it's better and most common to just look at the gross jobs impacts of new development, new projects." See Tr. 1501 (Loomis).

53. All of these benefits will be provided to the public without any socialization of transmission costs to ratepayers since only users of the line will be charged for the costs of the Project. See Tr. 1297-98 (Berry), 1367-69 (Proctor). Regulated Missouri utilities taking service will only pay for what capacity they use and the prudence of their decisions will be overseen by the Public Service Commission. See §§ 393.140(11), 393.150, 386.266. See also Ex. 118 at 4,

7-8, 29-30 (Berry Direct); Ex. 100 at 6, 12-13 (Skelly Direct); Ex. 119 at 1-2 (Berry Additional Direct); Ex. 120 at 3-4 (Berry Surrebuttal).

ii. The Project Will Lower Missouri Wholesale Prices and Production Costs.

54. The record shows that the Project is likely to have a favorable impact on wholesale electric rates in Missouri and reduce costs for Missouri electric users.

55. The Project will not increase transmission rates because its costs will not be recovered from ratepayers through regional cost allocation. However, it may eliminate the need for future cost-allocated projects, thereby reducing transmission rates paid by Missouri customers. See Ex. 120 at 7 (Berry Surrebuttal). The Company has agreed to accept a condition to its CCN not to recover its costs under RTO cost-allocation tariffs without the permission of the Commission. As shown by the Surrebuttal Testimony of Robert Zavadil, the additional variability added to the Ameren and the Missouri systems is very small compared to the variability that the electric grid already manages. Therefore, the Project's impact on real-time electric prices and ancillary services (which respond to system variability) will also be very small. See Ex. 109 at 7-11 (Zavadil Surrebuttal).

56. Robert Cleveland, a former senior project manager for DNV GL and now a managing director for Leidos Engineering, conducted a study of the effect of the Project on generators owned by Missouri utilities and the cost for those utilities to serve their load. Mr. Cleveland's adjusted production cost analysis showed total estimated savings to Missouri of $2.6 million in 2019, with Ameren Missouri in particular seeing a $1.0 million decrease in the business-as-usual scenario. See Ex. 117 at 5-6 & Sched. RC-2 at 3-6 (Cleveland Surrebuttal). His model results also show that there was a decrease in adjusted production cost in all four scenarios of his analysis. Id. He also concluded in response to Staff questions regarding cost

efficiency that the average annual variable cost of thermal generation in the Eastern Interconnection decreases with the Grain Belt Express Project under all four scenarios considered. Id. at 9.

57. Mr. Cleveland also examined the congestion costs incurred by Missouri utilities with respect to all of their load and generation fleet. He concluded that congestion costs, measured at the location of Missouri load, decrease with the addition of the Project. He also found that congestion costs would also be reduced for Ameren Missouri by $373,575, as well as for Kansas City Power & Light Co. and KCP&L Greater Missouri Operations Co. by $185,166. See Ex. 117 at 10-11 (Cleveland Surrebuttal).

58. Additionally, several days after the close of the evidentiary hearing, Ameren submitted to MISO its System Impact Study Final Report which indicated there were "no injection-related constraints for the 500 MW Maywood Interconnection" proposed by the Grain Belt Express Project. See Ex. 150.[22] The MISO study also included a transfer capability analysis to determine whether the injection from the Project "would materially decrease Ameren's import capability." It concluded that "no import constraints are to be assessed" at the Project's "injection at Maywood." Id.

59. Robert M. Zavadil, Co-founder and Executive Vice President of EnerNex, Inc., and a nationally recognized expert in transmission and wind integration issues,[23] concluded that the delivery of power by the Project to the planned Missouri converter station would not require an increase in regulation and operating reserve ancillary services. He also found that it was

[22] A copy of this MISO Report was submitted to Staff and other parties on December 2, 2014 as an amended response to Staff Data Request 129. It was admitted into evidence as Ex. 150 on December 16, 2014 when the Company's December 4, 2014 Motion to File Late-Filed Exhibit was granted.

[23] Ex. 206, Sched. SLK-25, -19, NREL Technical Report, "Calculating Wind Integration Costs" (July 2009) (citing EnerNex analysis); Ex. 323, Eastern Wind Integration & Transmission Study, p. 2 (noting Robert Zavadil as member of Study Team with other EnerNex employees).

"unlikely that additional ramping resources would need to be located near the Project's delivery point." See Ex. 110 at 8-9 (Zavadil Surrebuttal). He stated that the Grain Belt Express Project was more likely to lead to decreased variability in wind energy generation as it would promote diversity of wind resources serving Missouri in the MISO system. Id. at 9-11. Mr. Goggin additionally confirmed that wind integration costs are low, and that the Project would improve the diversity of wind generation and decrease variability. See Tr. 955-56, 969-70.

60. Considering the entirety of the evidence, the Grain Belt Express Project is likely to have a favorable impact on wholesale Missouri rates, and Staff's concerns are unfounded.

iii. The Alleged Detriments Cited by Certain Intervenors are Inaccurate, Do Not Outweigh the Benefits of the Project, or are Irrelevant.

61. In a decision approving the CCN application of Ameren for the Callaway-Franks transmission line, the Commission found that the "public interest" is broadly defined. The Commission found that "the ultimate interest is that interest of the public as a whole … and not the potential hardship to individuals …."[24] This is consistent with the historic practice of the Commission, confirmed by Missouri appellate courts, that holds the overall interests of the general public as supreme when making a public interest determination.[25]

62. The record here demonstrates that the balance of interests favors approval of the Project and its Missouri Facilities, which are not detrimental and are indeed highly beneficial to the public.[26]

[24] In re Union Electric Co., Report and Order, Case No. EO-2002-351, 2003 WL 22017276 at *15 (2003).
[25] In re Sho-Me Power Corp., Report and Order, Case No. EO-93-259, 1993 WL 719871 (1993); State ex rel. Mo. Pac. Freight Transp. Co. v. PSC, 288 S.W.2d 679, 682 (Mo. App. K.C.) aff'd sub nom. State ex rel. Mo. Pac. Freight Transp. Co. v. PSC, 295 S.W.2d 128 (Mo. 1956).
[26] See City of St. Louis, 73 S.W.2d at 400; Fee Fee Trunk Sewer, 596 S.W.2d at 468.

a. EMF Issues.

63. There is no credible evidence showing that electric and magnetic fields ("EMF") associated with electric transmission facilities pose any known risk to human health. Company witness Dr. William H. Bailey has spent the last 30 years researching "the exposure and potential biological, environmental, and health effects associated with electrical facilities and devices, including electric utility facilities, electrified railroad lines, industrial equipment, appliances, and medical devices that produce electromagnetic fields across a wide range of frequencies." See Ex. 108 at 1 (Bailey Surrebuttal). He has published or presented more than 50 papers on these subjects, taught at numerous universities, and advised many national and international agencies regarding the effects of EMF on human health. Id.

64. Dr. Bailey testified that in Missouri the Project will have two distinct sources of EMF: (1) the HVDC Line that will carry direct current (DC) electricity and (2) the short interconnection lines between the Missouri converter station and the electric grid which will carry alternating current (AC). Id. at 4-6. The maximum static magnetic field that will be produced by the DC line at full load is just under 900 mG, far below the 4 million mG level of recommended as the limit for the general public by the International Commission on Non-Ionizing Radiation Protection, an affiliate of the World Health Organization ("WHO"). Id. at 15. See also Ex. 111 at 21-22 (Galli Direct). Similarly, Dr. Bailey stated that the AC fields from the converter equipment "are quite low" at the boundaries of the converter "because [AC fields] diminish rapidly with distance." See Ex. 108 at 7 (Bailey Surrebuttal).

65. Based on his knowledge of the Project, Dr. Bailey stated that "to a reasonable degree of scientific certainty" the levels of static (DC) electric and magnetic fields, and extremely low frequency or ELF (AC) electric and magnetic fields associated with the Project

pose no known risk to human health. Id. at 33-34. He observed: "The WHO and other scientific and health agencies have thoroughly considered this issue and have concluded that, on balance, the scientific weight of evidence does not support the conclusion that static and ELF fields cause any long-term adverse health effects. Recent research does not provide evidence to alter this overall conclusion." Id. at 34.

b. GPS and Agricultural Impact Mitigation Policies.

66. Company witness Tad L. Wesley, an independent agronomist, testified that he "know[s] of no instance where a GPS guidance system did not function properly due to the presence of transmission lines." See Ex. 106 at 5 (Wesley Surrebuttal); Tr. 759:1-6. Similarly, Mr. Wesley testified that in the event some areas of the right-of-way will not be available for aerial application as a result of the construction of the Project, "landowners can develop an application plan using ground-based application equipment to cover any areas no longer suitable for aerial application." See Ex. 106 at 6 (Wesley Surrebuttal).

67. Mr. Wesley also testified that the Project will pose no permanent harm to the right-of-way. He explained that the Grain Belt Express Agricultural Impact Mitigation Policy ("AIMP") "details the comprehensive and conscientious strategies that Grain Belt Express established to avoid and minimize soil compaction and to restore soils to their former health if any compaction occurs." Id. at 3. The "AIMP sets out specific remedial steps in the event that compaction does occur" including "topsoil segregation, de-compaction, liming, tillage, or fertilization of impacted soils located both on and off Right-of-Way, or as otherwise agreed to with the landowner." Id., citing Sched. MOL-13 at 2, Ex. 102 (Lawlor Surrebuttal). Grain Belt Express will take steps to ensure it does not damage property during wet soil condition, including

"efforts to limit the areas of construction access/vehicular traffic, the use of construction matting, frozen ground construction, and decompaction activities." Id.

68. The AIMP is consistent with industry standards and practice, and a more detailed mitigation plan will be drafted and implemented after a route is finalized and all relevant land issues can be properly evaluated. A "one size fits all" policy regarding agricultural impact mitigation would not be inappropriate. See Tr. 760-61 (Wesley). Accordingly, and as described below in Section III, certain of Staff's proposed conditions regarding land mitigation are not appropriate or necessary because they fail to take into account particular environmental and property issues. See Tr. 761-62. Mr. Wesley testified that the AIMP "is consistent with what [he has] seen in the past for projects of this stage" and that as the Project progresses the Company will implement more detailed agricultural plans as appropriate and as required by various local, state and federal agencies. See Tr. 762:25-763:8.

c. Property Value Issues.

69. The evidence shows that transmission lines do not materially devalue property. Company witness Dr. Thomas Priestley stated that appraiser studies do not effectively measure the effect of transmission lines on property values. See Ex. 107 at 3-7 (Priestley Surrebuttal). Instead, Dr. Priestley testified that hedonic regression models are the preferred method to measure transmission lines' effect on property values because "they reflect the prices that buyers actually pay, rather than speculation about what buyers might do under hypothesized conditions" and "remove the subjectivity inherent in appraiser paired sales analyses." Id. at 6-17. Dr. Priestley stated that research has not only found that the presence of transmission lines does not typically affect the value of agricultural land, but that any impact on valuation tapers off quickly with distance and disappears almost entirely after 200 feet. Id. at 12.

70. Any analysis of effects on landowners' property values must consider the Company's compensation for easements. The Company will make easement payments to landowners equal to 100% of the fair market fee value of the easement area. See Ex. 101 at 20 (Lawlor Direct). In other words, Grain Belt Express will pay landowners 100% of the value of owning the area covered by the easement, while receiving only limited rights. Landowners can continue to use the easement area for farming and other purposes that do not interfere with transmission line operations. See Tr. 370 (Lawlor).

71. The Company will also make payments to landowners for every structure on the property. The landowner can elect a lump-sum upfront payment or annual payments for as long as the structure is on the easement area. See Ex. 101 at 20-21 (Lawlor Direct); Tr. 374-75. Annual payments will escalate at 2% per year. See Ex. 101 at 20-21 (Lawlor Direct). The Company will also pay for crop damage and will not limit that payment to a certain period of time as is customary in other easements. Id. at 21; Tr. 375 (Lawlor). After the construction of the Missouri Facilities, each landowner will be able to continue to farm and conduct other agricultural activities on the entirety of the easement area except for the footprint of the structures. See Ex. 101 at 21 (Lawlor Direct).

72. Looking at the broad interests of the general public and Grain Belt's commitments to avoid or mitigate landowner impacts, the benefits of the Project and its Missouri portion in particular outweigh any proposed individual detriments.[27]

III. CONDITIONS

1. Staff Condition No. 1 regarding the location of the transmission line is acceptable if the following proviso is added; " … ; provided, however, minor deviations to the location of

[27] In re Union Electric Co., Report and Order, Case No. EO-2002-351, 2003 WL 22017276 at *15 (2003).

the line will be permitted as a result of surveying, final engineering and design, and landowner consultation. Such minor deviations will be permitted without further Commission approval."

2. Staff Condition No. 2 regarding the removal or location of residences in the easement is acceptable.

3. Staff Condition No. 3 regarding a survey, its recording with county recorders of deeds, and its filing with the Commission is acceptable.

4. Staff Condition No. 4 and its subsections regarding construction, maintenance and other practices are acceptable, except for Conditions 4(f), (g), (q), and (u) which are not acceptable as explained in the Company Brief at 51-52.

5. Staff Condition 4(f) states: "Unless otherwise directed by the landowner, stumps will be treated to prevent regrowth." Grain Belt Express recommends that this condition be modified to state: "Stumps will be treated to prevent regrowth consistent with industry best practices. Vegetation treatments will consider vegetation types, site-specific land uses and any environmental sensitivities. Grain Belt Express will notify all landowners of the Transmission Vegetation Management Policy and of the specific vegetation treatments for each landowner's property."

6. Staff Condition 4(g) states: "Unless the landowner does not want the area seeded, disturbed areas will be reseeded with a blend of K31 fescue, perennial rye, and wheat grasses, fertilized, and mulched with straw." Grain Belt Express recommends that this condition be modified to state: "Unless the landowner does not want the area seeded, disturbed areas will be reseeded consistent with reclamation best practices in consultation with landowners, restoration specialists, and government agencies."

7. Staff Recommendation 4(q) states: "All right-of-way maintenance contractors will employ foremen that are certified arborists." Grain Belt Express recommends that this condition be modified to state: "Grain Belt Express will utilize vegetation consultants and certified arborists in the development and implementation of a Transmission Vegetation Management Plan that will address right-of-way maintenance in a comprehensive manner."

8. Staff Condition 4(u) states: "Prior to commencing any vegetation management on the right-of-way, Grain Belt Express will meet personally with all landowners to discuss Grain Belt Express' vegetation management program and plans for their property, and to determine if the landowners do or do not want herbicides used on their property. If a landowner does not want herbicides used, they will not be used." The Company requests that the following condition, which is consistent with this spirit of Staff Condition 4(u), be accepted to allow flexibility with mandated personal meetings if the landowner does not desire to meet, and to address the proper use of herbicides: "Prior to commencing construction, Grain Belt Express will notify all landowners in writing of the Transmission Vegetation Management Plan and of the specific vegetation treatments for each landowner's property. The Company will personally meet with each landowner who requests such a meeting. Landowners may request that herbicides not be used on their property, and such request will be honored if consistent with local conditions and land use."

9. Staff Condition No. 5 regarding the provision of quarterly updates is accepted.

10. Staff Condition No. 6 regarding the annual filing of requested affiliate information is accepted.

11. Staff Condition No. 7 regarding the filing of quarterly progress reports is accepted.

12. Staff Condition No. 8 states: "That the cost of the transmission line, converter stations and any AC collector system owned by Grain Belt Express will not be recovered through the SPP cost allocation process or from Missouri ratepayers." Although the Company agrees with the intent of this condition, its language is imprecise and overlooks the MISO cost-allocation process, as explained in the Company's Brief at 42-43. Therefore, the Company recommends that it be replaced with the following language: "Grain Belt Express will not recover any Project costs from Missouri retail ratepayers through MISO or SPP regional cost allocation without first obtaining the approval of the Missouri Public Service Commission in a new proceeding initiated by Grain Belt Express. As used in the foregoing sentence, the Project refers to the approximately 750-mile HVDC transmission line to be built by Grain Belt Express, including the HVDC converter stations and the AC feeder lines connecting the HVDC Project to wind generation facilities."

13. Staff Condition No. 9 regarding siting approvals is accepted.

14. Staff Condition No. 10 regarding the restoration of affected land is accepted.

15. Staff Condition No. 11 regarding the provision of information regarding Project financing and Project cost issues, and certifications by an officer of the Company is accepted.

16. Staff Condition No. 12 recommending additional studies should be rejected for the reasons stated in the Company's Brief at 31-35 and 45-46.

17. Staff Condition No. 13(a) states: "Grain Belt Express' commitment that it will not seek regional transmission organization cost allocation for its transmission project, nor for any transmission system upgrades necessary to safely accommodate it …." The first portion of this condition is unnecessary, given the Company's proposed condition responding to Staff Condition 8, above. The second part of this condition regarding upgrades is overly broad and

inappropriate. See Company Brief at 42-43. Because the Project's upgrades may be judged by an RTO to provide reliability benefits to load-serving entities and therefore subject to cost allocation under appropriate cost allocation models to such entities, Staff's condition must be modified.

18. Staff Condition 13(b) is acceptable if the following bracketed phrase is deleted since the capacity rating of the Missouri converter station has not yet been determined. See Ex. 113 at 21-22 (Galli Surrebuttal); Tr. 474-75 (Galli). Therefore, the Company agrees to the following condition: "Grain Belt Express' commitment to utilize only the 500 MW studied portion of the planned [approximately 1 GW] Missouri converter station."

19. Staff Condition No. 14 regarding the provision of the stated plans, agreements and studies is acceptable if the certain language in the middle of the condition is eliminated. The language that should be deleted from Staff Condition 14 is: "… for it to determine whether they show the transmission line and converter station in Missouri is needed, economically feasible and/or promotes the public interest in Missouri, …." Including such language would create unnecessary ambiguity in any report and order issued by the Commission that granted a CCN to Grain Belt Express and could be used to impeach any authority granted to the Company in such order. Therefore, the Company agrees to the Staff Condition 14 if the language is as follows: "That Grain Belt Express provide to the Commission the following for the proposed transmission project: … [with the fourteen categories of plans, agreements and studies as stated]."

20. Staff Condition No. 15 regarding NERC standards, the National Electric Safety Code and the Overhead Power Line Safety Act is accepted.

21. Staff Condition No. 16 regarding the provision of documentation relating to compliance with Condition 15 is accepted.

22. Staff Condition No. 17 regarding short-circuit ratios is accepted (with the elimination of "to" in the first line, which is unnecessary) if called for by the relevant RTO.

23. Staff Condition No. 18 regarding short-circuit ratios is accepted (with the elimination of "to" in the first line, which is unnecessary) if called for by the relevant RTO.

24. Staff Condition No. 19 regarding dedicated metallic return conductors is accepted.

25. Staff Condition No. 20 regarding the preparation of studies regarding adverse effects on nearby facilities is accepted.

26. Staff Condition No. 21 regarding annual status updates on discussions with Staff is accepted.

27. Staff Condition No. 22 mandating an interconnection study based on the Missouri converter station having 1000 MW of capacity and the potential of exporting energy from MISO and PJM into SPP is rejected for the reasons stated in the Company's Brief at 46-47. The Company has submitted an interconnection request to MISO for only a 500 MW interconnection. See Ex. 113 at 21-22 (Galli Surrebuttal).

28. Staff Condition No. 23 forbidding the commencement of any eminent domain proceeding until the construction of at least 25% of the Missouri converter station should be rejected in light of the Company's acceptance of other conditions. The Company has agreed to Staff Condition 11 where it will not install any electric transmission facilities on easement property in Missouri until it has obtained sufficient financial commitments. It is also agreed to the condition that it install the Missouri converter station. See Ex. 120 at 57 & Sched. DAB-14 at 14 (Berry Surrebuttal); Company Brief at 52-53.

29. Rockies Express Pipeline LLC ("REX") Recommendation No. 1 regarding a 1000-ft. minimum distance between the HVDC line and the REX pipeline is not acceptable for

the reasons stated in the Company's Brief at 48-49. It is not supported by any industry best practice or standard, as admitted by REX's witness. See Ex. 113 at 11 & Sched. AWG-11, Response to DR No. 4 (Galli Surrebuttal).

30. REX Recommendation No. 2 regarding a DC interference analysis is accepted.

31. REX Recommendation No. 3 regarding the confirmation of data and assumptions regarding the REX pipeline is accepted.

32. REX Recommendation No. 4 that all crossings of the HVDC line over the REX pipeline be required to be at 90 degree angles, plus or minus 10 degrees is not acceptable. It is not supported by any industry best practice or standard, as admitted by REX's witness. See Ex. 113 at 11 & Sched. AWG-11, Response to DR No. 5 (Galli Surrebuttal). However, the Company agrees to the following condition: "When engineering, routing, and cost constraints allow, as reasonably determined by Grain Belt Express, all crossings of the HVDC line over the REX pipeline will be at 90 degree angles, plus or minus 10 degrees."

33. REX Recommendation No. 5 should be rejected regarding the construction of towers no closer than 300 feet from the pipeline for the reasons stated in the Company's Brief at 48. It is not supported by any industry best practice or standard, as admitted by REX's witness. See Ex. 113 at 11-12 & Sched. AWG-11, Response to DR No. 6 (Galli Surrebuttal). Grain Belt Express agrees to provide REX with preliminary and final pole locations, and to meet with REX personnel regarding crossing permits, the assessment of impacts, and the need for appropriate mitigations.

34. REX Recommendation No. 6 regarding tower groundings is unacceptable as proposed. The issue requires future studies which Grain Belt Express agrees to conduct. After the studies are completed, the best engineering decisions can be made.

35. REX Recommendation No. 7 regarding DC voltage monitoring systems is unacceptable as proposed. The issue requires future studies which Grain Belt Express agrees to conduct. After the studies are completed, the best engineering decisions can be made. Grain Belt Express agrees to implement the voltage monitoring that is prescribed by these technical studies.

36. REX Recommendation No. 8 regarding notification and disclosure of faults is premature. The applicable DC interference studies (which the Company has agreed to conduct and which is the subject of Staff Condition No. 20, accepted by the Company) will be conducted. Grain Belt Express agrees to provide the notice that is recommended by the technical studies.

37. REX Recommendation No. 9 regarding a DC interference analysis regarding the converter station is accepted.

38. Grain Belt Express agrees to a condition that would require appropriate and relevant language from its Agricultural Impact Mitigation Policy to be incorporated into its Missouri transmission line easement agreement.

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ATTORNEYS FOR GRAIN BELT EXPRESS CLEAN LINE LLC

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 23rd day of December 2014.

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