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**

STAFF'S INITIAL BRIEF

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TABLE OF CONTENTS

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STAFF'S INITIAL POST-HEARING BRIEF

Introduction

Grain Belt Express Clean Line LLC is seeking multi-state authority to build an approximately 750 mile, high-voltage, direct current (HVDC) transmission line originating in southwest Kansas and terminating in east central Illinois, with converter stations in Kansas (~4.3 gigawatts (GW)), Missouri (~1.0 GW) and Illinois (~3.5 GW) to deliver from southwest Kansas into eastern Missouri 500 megawatts (MW) of alternating current (AC) electricity and 3.5 GW of AC electricity into west central Indiana.[1] The FERC has authorized Grain Belt Express to use a broad, open solicitation process from which Grain Belt Express, based on not unduly discriminatory or preferential criteria, may select a subset of those responding to the solicitation to negotiate directly with for transmission right rates on this transmission line project because Grain Belt Express is assuming all of the market risk of the project, will have no captive customer from which it can recover the project costs.[2]

[1] Ex. 100, GBE witness Skelly direct, p. 3, l. 19 to p. 4, l. 7; Ex. 111, GBE witness Galli direct, p. 3, l. 19 to p. 5, l. 7; Ex. 113, GBE witness Galli surrebuttal, p. 20, l. 20 to p. 22, l. 17; Ex. 118, GBE witness Berry direct, p. 6, ll. 3-13; Ex. 202, Staff witness Stahlman rebuttal, p. 2, l. 4 to p. 3, l. 10.
[2] Ex. 118, GBE witness Berry direct, p. 7., ll. 1-20; Grain Belt Express LLC, 17 FERC 61,098 (2014) (May 8, 2014, Order Conditionally Authorizing Proposal and Granting Waivers, Docket No. ER14-409-000).

Grain Belt Express is seeking a certificate of convenience and necessity from this Commission for that part of this multi-state project that would be built in Missouri—HVDC transmission line segment capable of delivering at least four GW of AC electricity into Missouri (500 MW) and Indiana (3.5 GW) that will cross the state of Missouri from south of St. Joseph to south of Hannibal, Missouri, (~206 miles[3]) and for an associated converter station near Ameren's Maywood 345 kV substation in Ralls County, Missouri, to deliver up to 500 MW of AC electricity into Missouri.[4] This request is novel because it is the first time anyone has sought from this Commission a certificate of convenience and necessity for any part of a transmission line project for which the FERC has authorized the developer of the project to negotiate transmission right rates.

Grain Belt Express has authority in Kansas[5] and Indiana[6] to operate as a public utility for those portions of its project that will be located in those states (an AC collector system and about 370 miles of HVDC transmission line in Kansas[7]; less than two miles of AC transmission line in Indiana[8]), and it has specific siting authority for that part of its

[3] Ex. 141; Ex. 100, GBE witness Skelly direct, p. 3, l. 19 to p. 4, l. 7; Ex. 101, GBE witness Lawlor direct, p. 1, ll. 16-18.
[4] Ex. 118, GBE witness Berry direct, p. 6, ll. 5-7; Ex. 102, GBE witness Lawlor surrebuttal, p 18, l. 22 to p. 19, l.7 and Sch. MOL-14.
[5] Ex. 201, Staff witness Beck rebuttal, Sch. DB-3, *In the Matter of the Application of Grain Belt Express Clean Line LLC for a Limited Certificate of Public Convenience to Transact the Business of a Public Utility in the State of Kansas*, Dec. 7, 2011, Order Approving Stipulation & Agreement and Granting Certificate, KCC Docket No. 11-GBEE-624-COC.
[6] Ex. 201, Staff witness Beck rebuttal, Sch. DB-5, *Petition of Grain Belt Express Clean Line LLC for: (1) a Determination of its Status as a "Public Utility" under Indiana Law; (2) a Determination that it has the Technical, Managerial, and Financial Capability to Operate as a Public Utility in Indiana; (3) Authority to Operate as a Public Utility in Indiana, including Authority to Exercise all Rights and Privileges of a Public Utility accorded by Indiana Law; (4) Authority to Transfer Functional Control of Operation of its Transmission Facilities to be Constructed in Indiana to a Fully Functioning Regional Transmission Organization; (5) a Determination that the Commission Should Decline to Exercise Certain Aspects of its Jurisdiction over Petitioner Clean Line LLC; (6) Authority to Locate its Books and Records outside the State of Indiana; (7) Consent by the Commission to Boards of County Commissioners for Petitioner Clean Line LLC to Occupy Public Rights of Way, to the Extent it may be Necessary; and (8) All other Appropriate Relief*, May 22, 2013, Order of the Commission, IURC Cause No. 44264.
[7] Ex. 201, Staff witness Beck rebuttal, Sch. DB-4-24.
[8] Ex. 201, Staff witness Beck rebuttal. Sch. DB-5-10.

HVDC transmission line in Kansas.[9] It has not yet sought authority for this project in Illinois. While it is independent of this project, on November 25, 2014, the Illinois Commerce Commission issued an order granting a Grain Belt Express affiliate—Rock Island Express Clean Line LLC—a certificate of convenience and necessity specifying the route in Illinois for a HVDC and AC transmission line project that originates in Iowa and terminates in Illinois; it appears from this order that Rock Island Express must get additional authority from the ICC to be able to condemn property to build the line on that route.[10] A copy of the ICC's Rock Island Express order is attached.

As it has expressed in its testimony and position statements, Staff recommends that the Commission find that Grain Belt Express has not established that the transmission line or converter station in Missouri are needed, economically feasible or promote the public interest and, therefore, not grant Grain Belt Express a certificate of convenience and necessity for them. However, if the Commission finds Grain Belt Express has shown the transmission line and converter station are necessary or convenient, then Staff recommends the Commission limit the authority it gives to protect life and property by requiring the entire multi-state HVDC transmission line be built with dedicated metallic return conductors and by requiring the entire multi-state project be built with protection and control safety systems that will automatically de-energize it

[9] Ex. 201, Staff witness Beck rebuttal Sch. DB-4, *In the Matter of the Application of Grain Belt Express Clean Line LLC for a Siting Permit for the Construction of a High Voltage Direct Current Transmission Line in Ford, Hodgeman, Edwards, Pawnee, Barton, Russell, Osborne, Mitchell, Cloud, Washington, Marshall, Nemaha, Brown, and Doniphan Counties Pursuant to K.S.A. 66-1,177 et seq.*, November 7, 2013, Order Granting Siting Permit, KCC Docket No. 13-GBEE-803-MIS.

[10] *Rock Island Clean Line LLC Petition for an Order granting Rock Island Clean Line LLC a Certificate of Public Convenience and Necessity pursuant to Section 8-406 of the Public Utilities Act as a Transmission Public Utility and to Construct, Operate and Maintain an Electric Transmission Line and Authorizing and Directing Rock Island pursuant to Section 8-503 of the Public Utilities Act to Construct an Electric Transmission Line*, November 25, 2014, Order, ICC No. 12-0560.

when an abnormal or fault condition occurs.[11] Staff recommends the Commission grant Grain Belt Express relief from complying with Commission rules 4 CSR 240-3.145, 4 CSR 240-3.175, and 3.190(1), (2) and (3)(A)-(D) and explicitly state in its order that the grant of the certificate of convenience and necessity is not a determination of the ratemaking treatment of the costs associated with the transmission line or converter station in Missouri.[12] Staff also recommends the Commission impose each of the following conditions on that certificate:

1. That the line may only be constructed in Missouri in the location Grain Belt Express specified in its application and as Grain Belt Express represented to the landowners in aerial photos it provided (Ex. 141), unless an affected landowner agrees to a route change in writing or the Commission by a subsequent order expressly authorizes it.[13]

2. That absent a voluntary agreement for the purchase of the property rights, the transmission line shall not be located in Missouri so that a residential structure currently occupied by the property owners will be removed or located in the easement requiring the owners to move or relocate from the property.[14]

3. That Grain Belt Express shall survey the transmission line location in Missouri after construction, record the easement location with the Recorder of Deeds in each county in Missouri where the easement is located and file a copy of its survey in this case.[15]

4. That, in Missouri, Grain Belt Express shall comply with the following construction, clearing, maintenance, repair, and right-of-way practices:

   Construction and Clearing

   a. Prior to construction, Grain Belt Express will notify all landowners in writing of the name and telephone number of Grain Belt Express' Construction Supervisor so that they may contact the Construction Supervisor with questions or concerns before, during, or after construction. Such notice will also advise the landowners of the

[11] Ex. 205, Staff witness Leonberger rebuttal, p. 4, l. 6 to p. 6, l. 7.
[12] Ex. 201, Staff witness Beck rebuttal, p. 15, l. 19 to p. 16, l. 9.
[13] Ex. 201, Staff witness Beck rebuttal, p. 12, l. 10 to p. 13, l. 15, including footnote 1 and Schedule DB-2.
[14] *Id*.
[15] *Id*.

expected start and end dates of construction on their properties.

b. Prior to construction, Grain Belt Express's Construction Supervisor will personally contact each landowner (or at least one owner of any parcel with multiple owners) to discuss access to the right-of-way on their parcel and any special concerns or requests about which the landowner desires to make Grain Belt Express aware.
c. From the beginning of construction until end of construction and clean-up of the right-of-way is complete, Grain Belt Express' Construction Supervisor will be on-site, meaning at or in the vicinity of the route, or on-call, to respond to landowner questions or concerns.
d. If requested by the landowner, Grain Belt Express will cut logs 12" in diameter or more into 10 to 20 foot lengths and stack them just outside the right-of-way for handling by the landowner.
e. Stumps will be cut as close to the ground as practical, but in any event will be left no more than 4" above grade.
f. Unless otherwise directed by the landowner, stumps will be treated to prevent regrowth.
g. 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.
h. 8. Best management practices will be followed to minimize erosion, with the particular practice employed at a given location depending upon terrain, soil, and other relevant factors.
i. Gates will be securely closed after use.
j. Should Grain Belt Express damage a gate, Grain Belt Express will repair that damage.
k. If Grain Belt Express installs a new gate, Grain Belt Express will either remove it after construction and repair the fence to its pre-construction condition, or will maintain the gate so that it is secure against the escape of livestock.
l. Grain Belt Express will utilize design techniques intended to minimize corona.
m. Should a landowner experience radio or TV interference issues believed by the landowner to be attributed to Grain Belt Express' line, Grain Belt Express will work with the landowner in good faith to attempt to solve the problem.
n. Grain Belt Express will clearly mark guy wires.

Maintenance and Repair

o. With regard to future maintenance or repair and right-of-way maintenance after construction is completed, Grain Belt Express will make reasonable efforts to contact landowners prior to entry onto the right-of-way on their property to advise the landowners of Grain Belt Express' presence, particularly if access is near their residence.

p. All Grain Belt Express contractors will be required to carry and maintain a minimum of one million dollars of liability insurance available to respond to damage claims of landowners. All contractors will be required to respond to any landowner damage claims within 24 hours. All contractors will be required to have all licenses required by state, federal, or local law.
q. All right-of-way maintenance contractors will employ foremen that are certified arborists.
r. If herbicides are used, only herbicides approved by the EPA and any applicable state authorities will be used, and herbicides will be used in strict compliance with all labeling directions.
s. Routine maintenance will not occur during wet conditions so as to prevent rutting.
t. Existing access roads will be used to access the right-of-way wherever available.
u. 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.

Right-of-Way Acquisition

v. Every landowner from whom Grain Belt Express requires an easement will be contacted personally, and Grain Belt Express will negotiate with each such landowner in good faith on the terms and conditions of the easement, its location, and compensation therefor. They will be shown a specific, surveyed location for the easement and be given specific easement terms.
w. After construction is completed, every landowner will be contacted personally to ensure construction and clean-up was done properly, to discuss any concerns, and to settle any damages that may have occurred.
x. If a landowner so desires, Grain Belt Express will give the landowner a reasonable period of time in advance of construction to harvest any timber the landowner desires to harvest and sell.
y. Grain Belt Express' right-of-way acquisition policies and practices in Missouri will not change regardless of whether Grain Belt Express does or does not yet possess a Certificate of Convenience or Necessity from this Commission.[16]

[16] *Id*.

Reporting Requirements.

5. That, while development and construction are ongoing, Grain Belt Express file with the Commission quarterly updates that summarize the construction status, operational status and financing milestones of the transmission line and converter stations, and include the following:

    a. identification of major construction vendors and contractors hired;
    b. identification of major operation and maintenance contractors retained;
    c. significant new debt and equity financings completed at the Grain Belt Express level; and
    d. significant changes in Grain Belt Express' senior management.[17]

6. That Grain Belt Express file annually with the Commission information about any affiliates that own or control electric generation resources in the MISO or the PJM footprints.[18]

7. That Grain Belt Express shall file quarterly progress reports in this docket which include:

    a. Percent completion of the entire transmission line and each converter station;
    b. Amount spent to date;
    c. Amount previously expected to have been spent to date;
    d. Total budget of project (and explanations of increases/decreases);
    e. SPP agreements and invoices;
    f. Agreements with other Missouri jurisdictional public utilities;
    g. FERC filings;
    h. Status of routing;
    i. Status of public outreach/public meetings; and
    j. Status of right-of-way and real estate acquisition in Missouri.[19]

8. 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.[20]

9. That, prior to commencing construction of the HVDC transmission line and converter station in Missouri, Grain Belt Express will obtain the state or federal siting approvals required by law to begin construction of the entirety of this transmission project that is sited outside the state of

[17] Ex. 201, Staff witness Beck rebuttal, p. 13, l. 17 to p. 15, l. 17.
[18] *Id*.
[19] *Id*.
[20] *Id*.

Missouri. Transmission line siting approvals from the Kansas,[21] Illinois, and Indiana state utility commissions shall be sufficient to satisfy this condition.[22]

10. That, to the extent reasonably possible, Grain Belt Express restore affected land to the condition which existed prior to the construction once construction of the line is complete.[23]

11. That Grain Belt Express not install any electric transmission facilities on easements in Missouri until after it has obtained commitments for funds in a total amount equal to or greater than the total cost to build the entirety of this multi-state transmission project. To allow the Commission to verify its compliance with this condition, Grain Belt Express shall file the following documents with the Commission at such time as Grain Belt Express is prepared to begin to install electric transmission facilities in Missouri:

    a. On a confidential basis, equity and loan or other debt financing agreements and commitments entered into or obtained by Grain Belt Express or its parent company for the purpose of funding Grain Belt Express' multi-state transmission project that, in the aggregate, provide commitments for funds for the total project cost;
    b. An attestation certified by an officer of Grain Belt Express that Grain Belt Express has not, prior to the date of the attestation, installed transmission facilities on easement property; or a notification that such installation is scheduled to begin on a specified date;
    c. A statement of the total multi-state transmission project cost, broken out by the categories of engineering, manufacturing and installation of converter stations; transmission line engineering; transmission towers; conductor; construction labor necessary to complete the project; right of way acquisition costs; and other costs necessary to complete the project., and certified by an officer of Grain Belt Express, along with a reconciliation of the total project cost in the statement to the total project cost as of the Application of $2.2 billion; and property owned in fee by Grain Belt Express including the converter station sites;
    d. A reconciliation statement, certified by an officer of Grain Belt Express, showing that (1) the agreements and commitments for funds provided in (a) are equal to or greater than the total project

[21] Grain Belt Express presently has Kansas siting authority. Ex. 201, Staff witness Beck rebuttal Sch. DB-4, *In the Matter of the Application of Grain Belt Express Clean Line LLC for a Siting Permit for the Construction of a High Voltage Direct Current Transmission Line in Ford, Hodgeman, Edwards, Pawnee, Barton, Russell, Osborne, Mitchell, Cloud, Washington, Marshall, Nemaha, Brown, and Doniphan Counties Pursuant to K.S.A. 66-1,177 et seq.*, November 7, 2013, Order Granting Siting Permit, KCC Docket No. 13-GBEE-803-MIS.
[22] *Id*.
[23] *Id*.

cost provided in (c) 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).[24]

12. That Grain Belt Express perform the following studies, designed after Staff and other parties have had the opportunity to provide meaningful input regarding the quality of the data and the reasonableness of the inputs used for (1) load assumptions for the year 2019, (2) generator capacities, efficiencies, dispatch stack, or bid amounts for the year 2019, (3) the wind delivery used for the year 2019, (4) the level of precision used in modeling factors such as generator heat rate curve, transmission loading curves, or other inputs to the PROMOD model used for the studies, and provide them to the Commission 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:

    a. Production modeling that incorporates:

        - day-ahead market prices to serve load;
        - real-time market prices to serve load;
        - ancillary services prices to serve load;
        - day ahead market prices realized by Missouri-owned or located generation;
        - real-time market prices realized by Missouri-owned or located generation;
        - ancillary services prices realized by Missouri-owned or located generation; and
        - an estimate of the impact of Grain Belt Express' transmission project on the operational efficiency of Missouri-owned or located generation.[25]

    b. Production, transmission, and economic modeling or analysis to determine:

        - the cost of transmission upgrades that may be economical to resolve the transmission constraints that its energy injections will cause or exacerbate;
        - the impact of using the entire design capacity of the Missouri converter station;
        - the net impact to Missouri utilities of picking up Missouri energy by day for export to PJM or SPP.; and

[24] Ex. 201, Staff witness Beck rebuttal, p. 13, l. 17 to p. 15, l. 17; Staff witness Murray rebuttal, p. 7, l. 12 to p. 9, l.10 and p. 10, l. 5 to p. 11, l. 3; Staff witness Murray, Tr. 1430, l. 15 to Tr. 1431, l.12 and Tr. 1433, l.13 to Tr. 1434, l. 22 .
[25] Ex. 206, Staff witness Kliethermes rebuttal, p. 3.

- whether the variability of the injected wind could be better managed in the SPP prior to injection.[26]

13. That Grain Belt Express provide to the Commission documentation of:

    a. 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; and
    b. Grain Belt Express' commitment to utilize only the 500 MW studied portion of the planned approximately one GW Missouri converter station capacity.[27]

14. That Grain Belt Express provide to the Commission 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, the following for the proposed transmission project:

    - completed Storm Restoration Plans,
    - the Interconnection Agreement with SPP,
    - the Interconnection Agreement with MISO,
    - the Interconnection Agreement with PJM,
    - the MISO Feasibility Study,
    - the MISO System Planning Phase Study,
    - the MISO Definitive Planning Phase Study,
    - the SPP Dynamic Stability Assessment,
    - the SPP Steady State Review,
    - the SPP System Impact Study,
    - the PJM Feasibility Study,
    - the PJM System Impact Study,
    - the PJM Facilities Study, and
    - each other study necessary or required for interconnection with SPP, MISO or PJM.[28]

15. That Grain Belt Express comply with the appropriate NERC standards for a project of this scope and size, National Electric Safety Code for a project of this size and scope, rule 4 CSR 240-18.010, and the Overhead Power Line Safety Act, § 319.075 et seq., RSMo.[29]

16. That Grain Belt Express provide to the Commission completed documentation of the Grain Belt Express plan, equipment, and engineering drawings to achieve compliance with the NERC standards for

[26] Ex. 206, Staff witness Kliethermes rebuttal, p. 3-4.
[27] Ex. 206, Staff witness Kliethermes rebuttal, p. 4.
[28] Ex. 203, Staff witness Lange rebuttal.
[29] Ex. 203, Staff witness Lange rebuttal.

a project of this scope and size, National Electric Safety Code for a project of this size and scope, rule 4 CSR 240-18.010, and the Overhead Power Line Safety Act, § 319.075 et seq., RSMo.[30]

17. That Grain Belt Express to meet a short-circuit ratio acceptable to the SPP for the Kansas converter station, acceptable to the MISO for the Missouri converter station, and acceptable to the PJM for the converter station near Sullivan, Indiana.[31]

18. That Grain Belt Express to provide to the Commission the definitive planning phase studies or facilities studies, as appropriate, which demonstrate that the high-voltage converter station sited in a regional transmission organization's footprint meets the levels of short circuit ratio acceptable to that regional transmission organization.[32]

19. That Grain Belt Express show the Commission before it begins commercial operation of the multi-state project that it built the entire multi-state HVDC transmission line with dedicated metallic return conductors which are operational and that the entire multi-state project has operational protection and control safety systems that automatically de-energize the project within approximately 150 milliseconds of when an abnormal or fault condition occurs.[33]

20. That studies be conducted to determine if the operation of the HVDC transmission line, the DC-to-AC converter station in Missouri, and the Grain Belt Express-owned portion of the AC electric transmission line exiting the converter station have adverse impacts on nearby facilities. These engineering studies must include, but not be limited to, the following: the effects of tower footing groundings, if used; analysis of metallic underground facilities, other AC lines, and telecommunications facilities that are located within a distance from the HVDC transmission line, as determined by an appropriately qualified expert, where there may be adverse effects on the facilities; analysis of metallic underground facilities, other AC lines, and telecommunications facilities that are located within a distance from the HVDC converter station, as determined by an appropriately qualified expert, where there may be adverse effects on the facilities; a determination whether there are locations where the HVDC line parallels a pipeline and an existing AC line and, if so, whether there are any combined effects on steel pipelines (and other underground metallic facilities); and the effects of the HVDC transmission line exiting the converter station. If any of these studies show that mitigation measures

[30] Ex. 203, Staff witness Lange rebuttal.
[31] Ex. 203, Staff witness Lange rebuttal, p. 8, l. 24 to p. 11, l. 12; Staff witness Lange Tr. 1648, l. 8 to Tr. 1652, l. 8.
[32] *Id*.
[33] Ex. 205, Staff witness Leonberger rebuttal, p.4, l. 6 to p. 6, l. 10.

are identified/needed, those measures must be in place prior to commercial operation of the HVDC transmission line. The Commission should also require that these studies be made available to Staff and affected facility owners at least 45 days prior to commercial operation of the HVDC transmission line, disclose how the parameters for conducting them were determined (e.g., continuous 24-hour recordings at a certain time of year), and be conducted by persons knowledgeable in (1) HVDC power lines, (2) DC-to-AC converter stations, (3) pipeline cathodic protection systems, (4) corrosion of underground metallic facilities, (5) interference with AC utility lines, (6) interference with telecommunications facilities, and (7) the effects of DC and AC interference on the facilities identified in Exhibit 3 of Grain Belt Express' Application.[34]

21. That Grain Belt Express file annual status updates on discussions with Staff regarding the need for additional studies of the impacts of its facilities on other facilities in Missouri, a summary of the results of any additional studies, and any mitigation measures that have been implemented to address underground metallic structures, telecommunications facilities, and AC lines. Mitigation measures indicated by future studies must be implemented within three (3) months of discovery that additional mitigation measures are needed.[35]

22. That Grain Belt Express complete and make public regional transmission organization interconnection studies based on the Missouri converter station having one GW of capacity and based on the potential of the transmission project for exporting energy from the MISO and the PJM, and importing energy into the SPP, with an opportunity for parties to review the studies and bring issues before the Commission, prior to Grain Belt Express commencing any eminent domain proceedings in Missouri.[36]

23. That Grain Belt Express may not commence any eminent domain proceedings until after the actual construction of at least 25% of the completed cost, excluding engineering, planning, and land purchase costs, of the Missouri converter station.[37]

Argument

After providing background on certificates of convenience and necessity, and when a utility is a public utility in Missouri, Staff's argument, like its position statements,

[34] Ex. 205, Staff witness Leonberger rebuttal, p. 6, l. 8 to p. 8, l. 21; Staff witness Leonberger Tr. 1700, l. 10 to Tr. 1710, l. 18.

[35] Ex. 205, Staff witness Leonberger rebuttal, p. 8, l. 22 to p. 9, l. 15
[36] Ex. 202, Staff witness Stahlman rebuttal.
[37] *Id*.

follows the order of the issues as listed in the list of issues and witnesses Staff filed on behalf of the parties on October 27, 2014. Rather than restating in its argument each condition it recommends the Commission impose, Staff provides its rationales for why the Commission should adopt them.

CERTIFICATES AND PUBLIC UTILITY

Shortly after the Public Service Act became law in 1913 the Commission addressed whether public utilities were required to obtain only one certificate to expand their operations throughout the state or whether they needed a new certificate each time they expanded them. The Commission found only one certificate was required, but one Commissioner dissented arguing a new certificate was required each time a public utility expanded its operations.[38]

In 1930, after the Commission brought a lawsuit against Kansas City Power & Light Company for not obtaining a certificate of convenience and necessity before building a new transmission line that caused interference on an existing telephone line, the Missouri Supreme Court held that before a public electric utility lawfully could expand its operations into new territory, it had to obtain a certificate of convenience and necessity from the Commission to do so.[39] In 1934 the Commission began expressly issuing what are now called "area" certificates and what were previously called "blanket" certificates.[40] The following quote is from that order[41]:

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[38] *In the Matter of the Complaint of Missouri Valley Realty Company v. Cupples Station Light, Heat and Power Company and Phoenix Light, Heat and Power Company*, Report of the Commission, 2 Mo P.S.C. 1 (1914).
[39] *Public Service Commission v. Kansas City Power & Light Company*, 325 Mo. 1217, 31 S.W.2d 67 (1930).
[40] *In Re Kansas City Power & Light Company*, Report and Order, 21 Mo. P.S.C. 1 (1934).
[41] *Id.* at 5-6.

In our opinion, the present application as amended, and construed by us in this report, should be sustained, and the authority sought should be granted. The issue of this order constitutes an important step in a program which the Commission has long contemplated.

During the life of this Commission the electric utilities have expanded from modest enterprises each serving restricted, local, usually municipal needs, to wide flung systems serving hosts of communities and the intervening rural areas. Reductions in the rates charged for electricity have been constant during the life of this Commission partly as a result of the exercise of our powers of regulation, partly because of improvements in the art, and partly because of increased use. The electricity now consumed in the State would have cost at least twelve million dollars per annum more than it now costs if the rates charged when this Commission was organized were still prevailing, or even at the rates charged in 1921 when the present uses of current for other purposes than lighting had been developed.

So far as can be foreseen, the uses of electricity have only begun. The improvements in the art have been so rapid, the economies affected by the development of large transmission systems have been so great, the possible uses for this quiet, clean, efficient servant of human needs so manifold, that it requires no very lively imagination to envision the entire state gridironed with transmission lines and every homestead, however humble, enjoying the benefits of cheap and constant light, heat, and power. As a harbinger of the realization of this vision, we now find the state served by a number of large and efficient electric systems. It is clearly to the public interest that the area in which service is to be rendered by each of them be marked out and designated. Thus responsibility will be fixed; the citizen will know to whom to look for service; the utility will know within what field to concentrate its activities and to develop its market.

We may now contemplate the possibility of the division of the state into districts each served by a dependable electric utility upon which may reasonably be imposed the duty of service in its given area. Studies looking to this end have been made by the Electric Department of the Commission during the last few years and in some instances boundaries between utilities have been established and small areas, such as a portion of a county, have been assigned

> to a utility. The present order by which the allocation of a large area to a utility is made is the first of what is hoped to be a series of such orders.

At the same time the nature of a certificate of convenience and necessity was being defined, so was who is required to get one. In 1918, after the Commission had ordered Mr. Dancinger to restore electric service to persons to whom he had cut that service off, the Missouri Supreme Court held that, on facts which included that those receiving electrical service had to supply their own lines to the brewery where the generator was located and that electricity was provided only when more electricity was generated than needed to run the brewery for which the generator was obtained, Mr. Danciger was not operating as a public utility. In its opinion the Court stated, "It is certainly fundamental that the business done by respondent either constitutes him a 'public utility,' or it does not. If he is a public utility, he is such within the whole purview, and for all inquisitorial and regulatory purposes of the Public Service Commission Act."[42] The Court also quoted Mr. Wyman on public service corporations, with approval, as follows[43]:

> The rule by which profession of public employment is to be tested, where, as here, such profession arises if at all implicitly, is thus laid down by Mr. Wyman:
>
> "The fundamental characteristic of a public calling is indiscriminate dealing with the general public. As Baron Alderson said in the leading case: 'Everybody who undertakes to carry for any one who asks him is a common carrier. The criterion is whether he carries for particular persons only, or whether he carries for every one. If a man holds himself out to do it for every one who asks him, he is a common carrier; but if he does not do it for every one, but carries for you and me only, that is a matter of special contract.' This regular course of public service without respect of persons makes out a plain case of public profession by reason of the

[42] *State ex rel. M. O. Danciger & Co. v. Public Service Commission of Missouri*, 275 Mo. 483; 205 S.W. 36, 40; 18 A.L.R. 754 (Mo. 1918).
[43] 205 S.W. at 42.

> inevitable inference which the general public will put upon it. 'One transporting goods from place to place for hire, for such as see fit to employ him, whether usually or occasionally, whether as a principal or an incidental occupation, is a common carrier.' " 1 Wyman on Pub. Service Corps. 227.

The Supreme Court's 1918 view of the law in Missouri on when an entity is a public utility is unchanged.[44]

For purposes of the Commission's jurisdiction here, it is noteworthy that in 1968 the Commission found Progressive Industries, Inc. to be subject to its jurisdiction when Progressive began building a transmission line from Springfield to Nixa, Missouri, to provide electricity to a municipal distribution system in the city of Nixa without having first obtained a certificate of convenience and necessity and The Empire District Electric Company complained.[45] In its Report and Order in that case the Commission expressly found that Progressive was an "important link" in the distribution of electricity in Nixa, distinguishing the facts before it from those before the Missouri Supreme Court in *State ex rel. Buchanan County Power Transmission Company v. Baker*, 9 S.W.2d 589 (Mo. Banc 1928), where the court found that, although argued, the evidence did not show Buchanan County Power Transmission Company was an "important link" in the distribution of electricity to the people of St. Joseph, Missouri. If built, Grain Belt Express' HVDC transmission line and converter station in Missouri would be subject to PSC jurisdiction as an "important link" within the meaning of the Progressive case.

Additionally, Grain Belt Express is required to provide "open access transmission service to all 'eligible customers," as defined by the FERC pro forma OATT [Open

[44] See *e.g. Hurricane Deck Holding Company v. Public Service Commission*, 289 S.W.3d 260 (Mo. App. 2009).
[45] *The Empire District Electric Company v. Progressive Industries, Inc.*, Report and Order, 13 Mo.P.S.C.(N.S.) 659 (Case No. 16,447 decided April 2, 1968).

Access Transmission Tariff]."[46] Grain Belt Express' FERC-approved selection criteria for selling transmission capacity follow[47]:

> Grain Belt proposes to initially screen customers according to the following selection criteria: (1) first mover status, i.e., a potential customer's commitment to pursue a customer agreement within Grain Belt's designated negotiation windows; (2) investment grade credit rating or other standards of creditworthiness to be specified in the open solicitation notice; (3) commitment to pay a non-refundable deposit upon execution of a customer agreement; (4) firm transmission service reservation for at least five years; and (5) firm transmission service reservation for at least 50 MW of capacity. Grain Belt then proposes to rank potential customers for the initial and any subsequent phases of bilateral negotiations based on the following criteria: (1) level of creditworthiness; (2) early commitment in the Project's development cycle; (3) project risk-sharing through phased non-refundable deposits or similar financial commitments during the Project's development cycle; (4) ability of the customer to assist with the Project's development needs, including obtaining necessary siting approvals and governmental authorizations; (5) longer term or service; (6) larger capacity reservation; (7) ability to access Project converter stations to deliver or receive power; (8) completion of generation development milestones or evidence of need for Project capacity (as appropriate); (9) commercial operation date for generation or timing of transmission service commencement date (as appropriate); and (10) the material price terms contained in initial offers. Grain Belt explains that not all ranking criteria will be weighted the same, depending on the needs of the Project, but that the criteria will be applied in a non-discriminatory manner – i.e., that customers with an identical ranking characteristic will be afforded the same weight for that particular characteristic.

If Grain Belt Express builds this line it must provide transmission service that is not unlawfully discriminatory.

The foregoing show that Grain Belt Express is a public utility, but it is Staff's position the Commission should not grant it the certificate of convenience and necessity it needs to lawfully act as a public utility in Missouri. However, if the Commission grants

[46] Grain Belt Express LLC, 17 FERC 61,098 (2014) (May 8, 2014, Order Conditionally Authorizing Proposal and Granting Waivers, Docket No. ER14-409-000). GBE witness Skelly, Tr. 109, l.14 to Tr. 112, l. 16; Ex. 118, GBE witness Berry direct, p. 9, ll. 11-17; Ex. 120, GBE witness Berry surrebuttal, p. 63, ll. 9-18; Ex. 552, Reicherts witness Reichert rebuttal, p. 15, ll. 8-9; Ex. 301, MLA witness Gray rebuttal, p. 15, ll. 6-7; Ex. 202, Staff witness Stahlman, p. 4, l. 18 to p. 5, l. 5, including footnote 20.

[47] Grain Belt Express LLC, 17 FERC 61,098 (2014), p. 9, ¶20, (May 8, 2014, Order Conditionally Authorizing Proposal and Granting Waivers, Docket No. ER14-409-000).

Grain Belt Express a certificate of convenience and necessity, Staff recommends that it impose a number of conditions on that certificate.

LISTED ISSUES

1. Does the evidence establish that the high-voltage direct current transmission line and converter station for which Grain Belt Express Clean Line LLC ("Grain Belt Express") is seeking a certificate of convenience and necessity ("CCN") are necessary or convenient for the public service?

As stated in its position statements, Staff's answer to this question is "No."

In forming its opinion that the Commission should not issue Grain Belt Express a certificate of convenience and necessity to build that portion of its multi-state transmission project in Missouri it seeks, Staff relied on the five factors the Commission listed in the case *In Re Tartan Energy*, GA-94-127, 3 Mo.P.S.C.3d 173, 177 (1994), for deciding whether to grant Tartan Energy a certificate of convenience and necessity to provide retail gas service in a number of southern Missouri counties. They are:

- Whether there is a need for the facilities and service;
- Whether the applicant is qualified to own, operate, control and manage the facilities and provide the service;
- Whether the applicant has the financial ability for the undertaking;
- Whether the proposal is economically feasible; and
- Whether the facilities and service promote the public interest.

In the *Tartan Energy* case, the Commission explained that the Commission first stated these five factors in *Re Intercon Gas, Inc.*, 30 Mo P.S.C. (N.S.) 554 (1991), where the Commission canvassed a number of certificate cases and distilled them into these five

factors for purposes of deciding whether, and to whom, to grant a certificate of convenience and necessity for an intrastate natural gas pipeline. In its opinion on review of the Commission's *Intercon Gas* decision, the Missouri Western District Court of Appeals said the following:

> The PSC has authority to grant certificates of convenience and necessity when it is determined after due hearing that construction is "necessary or convenient for the public service." § 393.170.3. The term "necessity" does not mean "essential" or "absolutely indispensable," but that an additional service would be an improvement justifying its cost. *State ex rel. Beaufort Transfer Co. v. Clark,* 504 S.W.2d at 219. Additionally, what is necessary and convenient encompasses regulation of monopoly for destructive competition, prevention of undesirable competition, and prevention of duplication of service. *State ex rel. Public Water Supply Dist. No. 8 v. Public Serv. Comm'n,* 600 S.W.2d 147, 154 (Mo.App.1980). The safety and adequacy of facilities are proper criteria in evaluating necessity and convenience as are the relative experience and reliability of competing suppliers. *State ex rel. Ozark Elec. Coop. v. Public Serv. Comm'n,* 527 S.W.2d 390, 394 (Mo.App.1975). Furthermore, it is within the discretion of the Public Service Commission to determine when the evidence indicates the public interest would be served in the award of the certificate. *Id.* at 392.[48]

As Staff suggested in its position statements, the Commission should not necessarily limit itself to the five Tartan factors when deciding whether all of the benefits to the general public of the proposed high-voltage direct current transmission line and converter stations exceed all the costs they cause, particularly the benefits and costs in Missouri. In this vein it is worth noting that in 1995 the Commission granted UtiliCorp United Inc. a certificate of convenience and necessity to distribute natural gas in and about Salem, Missouri, over Staff's and Public Counsel's "assiduously pursued" challenge to the economic feasibility of the plan to provide natural gas service, finding "no significant challenge to the ability of UtiliCorp to operate a safe and efficient gas

[48] *State ex rel. Intercon Gas, Inc. v. Public Service Commission*, 848 S.W.2d 593, 597-98 (Mo. App. 1993).

distribution service," that "the provision of natural gas service to the Salem area will be in the public benefit, not only as a service to residential customers, but also as an incentive to help promote the economic growth of the economy," and that "[t]here is little question that UtiliCorp can suffer a complete loss on this project without appreciable damage to its Missouri operation or harm to its ratepayers."[49]

It is still Staff's opinion that Grain Belt Express has not established its multi-state HVDC transmission project satisfies in Missouri the following three of the five Tartan factors—need, economic feasibility and promotion of the public interest. While it is Staff's view that Grain Belt Express has not met these factors, Staff has recommended conditions that may allow Grain Belt Express to show it meets these factors.

1. need for the facilities and service

Grain Belt Express has not established the need for the high-voltage transmission line and converter station in Missouri. Grain Belt Express relies on the Missouri Renewable Energy Standard, RSMo 393.1025 et seq., as implemented by rule 4 CSR 240-20.100, for the need in Missouri for the transmission line and Missouri converter station. That reliance is questionable. The Missouri Renewable Energy Standard requires only investor-owned electric utilities to generate or purchase electricity generated from renewable energy resources or to buy renewable energy credits[50] to meet no less than fifteen percent of their retail electric sales in each calendar year beginning in 2021. Only Union Electric Company, d/b/a Ameren Missouri,

[49] *In the Matter of UtiliCorp United, Inc.,* Report and Order, 4 MoPSC3d 7, 9-10 (Case No. GA-95-216 decided August 8, 1995).
[50] Ex. 201, Staff witness Beck rebuttal, p. 9.

has not yet disclosed whether it has existing capacity and new contracts that will meet or exceed that requirement.[51]

As to the asserted pent-up need for transmission to deliver wind energy from southwest Kansas into Missouri that is Grain Belt Express asserts is holding up the development of wind farms there,[52] it is Staff's position that, similarly to Grain Belt Express' transmission line project, many of these wind farms are project financed, which means they need sufficient financing commitments before construction begins.[53]

2. qualified to own, operate, control and manage the facilities and provide the service

Grain Belt personnel, including Michael P. Skelly, with his over 20 years of experience in the renewable energy business and Anthony Wayne Galli, with his over 15 years of experience in the electric transmission industry, together with their consultants DNV GL, Louis Berger Group, Inc., EnerNex, LLC, Strategic Economic Research, LLC, have the requisite qualifications now for moving forward on Grain Belt Express' transmission project, but, since final design, construction and operations have not begun, Grain Belt Express will need to obtain additional expertise for constructing, owning, operating, controlling and managing the high-voltage transmission line and converter stations.[54]

[51] *Id*.
[52] Ex. 118, GBE witness Berry direct, pp. 3-4.
[53] Ex. 201, Staff witness Beck rebuttal, p. 8.
[54] Ex. 100, GBE witness Skelly direct, p. 1; Ex. 111, GBE witness Galli direct, p. 2; Ex. 116, GBE witness Moland direct, p. 1; Ex. 104, GBE witness Gaul direct, p. 1; Ex. 109, GBE witness Zavadil direct, p. 1; Ex. 114, GBE witness Loomis direct, p. 1; Ex. 201, Staff witness Beck rebuttal, p. 10.

3. financial ability for the undertaking

Grain Belt Express' multi-state HDVC transmission line project is a merchant project for which Grain Belt Express is assuming all of the market risk and will have no captive customers from which it can recover the project costs.[55] Through intermediary entities Grain Belt Express is owned primarily by GridAmerica Holdings, Inc. ("GridAmerica"), a subsidiary of National Grid USA, and by Clean Line Investor Corp., a subsidiary of ZAM Ventures, LP ("ZAM Ventures").[56] As of December 31, 2013, National Grid USA had a total book value capitalization of approximately $14 billion,[57] and, as of March 31, 2014, its parent, National Grid Plc had a total book value capitalization of about $57 billion.[58] ZAM Ventures has a consolidated net worth of $500 million based on U.S. GAAP measurements.[59] Through intermediary entities ZAM Ventures is owned by Ziff Brothers Investments, LLC, a multi-billion dollar family investment fund.[60] The estimated net worth of the three Ziff Brothers is approximately $14 billion.[61] The foregoing show that Grain Belt Express has the financial ability to move forward with this merchant project and it is Staff's position that Grain Belt Express satisfies this factor.[62]

4. economically feasible

Grain Belt Express has not shown its proposed HVDC transmission line and converter stations are economically feasible.

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[55] Ex. 118, GBE witness Berry direct, p. 7., ll. 1-20; Grain Belt Express LLC, 17 FERC 61,098 (2014) (May 8, 2014, Order Conditionally Authorizing Proposal and Granting Waivers, Docket No. ER14-409-000).
[56] Ex. 204, Staff witness Murray rebuttal, p. 4, ll. 16-22.
[57] Ex. 204, Staff witness Murray rebuttal, p. 7, ll. 4-5.
[58] Ex. 204, Staff witness Murray rebuttal, p. 7, ll. 7-8.
[59] Ex. 204, Staff witness Murray rebuttal, p. 6, ll. 1-2.
[60] Ex. 204, Staff witness Murray rebuttal, p. 5, ll. 13-19.
[61] Ex. 204, Staff witness Murray rebuttal, p. 5, ll. 19-20.
[62] Ex. 204, Staff witness Murray rebuttal, p. 3, ll. 12-15.

Staff witness Beck testified that the results of the open solicitation and capacity allocation process for the sale of transmission rights on Grain Belt Express' multi-state transmission project the FERC has authorized may show economic feasibility,[63] but Staff is not recommending the Commission wait or rely on them.

Generally, Grain Belt Express alleges that the HVDC transmission line and converter stations are economically feasible because HVDC technology is the most cost-effective means of moving large amounts of renewable energy (electricity) over long distances, and high-capacity factor wind energy from western Kansas is the cheapest form of renewable energy in the Midwest and competitive with the cost of electricity generated by fossil-fuel power plants; therefore, electricity delivered over the high-voltage transmission line and converter stations will be lower cost than alternatives for meeting renewable portfolio standards and general demand for clean energy. If these assumptions are true, Grain Belt Express may be able to attract transmission customers to make the HVDC transmission line and converter stations economically feasible.

It is Staff's position that Grain Belt Express is ignoring what may be significant costs affecting the economic feasibility of the HVDC transmission line and converter stations, and that Grain Belt Express' studies have weaknesses. As a result, Staff is unable to conclude the HVDC transmission line and converter stations are economically feasible with regard to Missouri. Staff witness Sarah L. Kliethermes testifies to Staff's issues with the limits in the scope and methods with which Grain Belt Express modeled the regional transmission organization markets, as well as Staff's concerns with the

[63] Ex. 201, Staff witness Beck rebuttal, p. 11, ll.19-20; Staff witness Beck, Tr. Vol. 17, p. 1747, l. 25 to p. 1749, l. 10.

quality of the data and reasonableness of the inputs Grain Belt Express used.[64] Staff witness Michael Stahlman testifies to the following limitations:

> (1) because the regional transmission organization interconnection transmission upgrades are unknown, the economic feasibility of the project is unknown;
> (2) because operational, maintenance, and emergency restoration plans are not determined, their costs are unknown and the economic feasibility of the project is unknown;
> (3) because the project is less economic than it would be if it allowed energy to be exported from the MISO and the PJM; and
> (4) Missouri customer demand for wind energy may be low.[65]

Staff is concerned that Grain Belt Express has not finished the SPP, MISO, and PJM RTO study processes to have a complete estimate of the expenditures needed to construct the project and that several of the previous studies are inadequate since they are not sufficiently thorough or they are inconsistent with Grain Belt Express' current project design.

At the time Grain Belt Express filed its Missouri application, Staff was under the impression that the HVDC transmission line would inject a maximum of 3500 MW of wind energy into the MISO, PJM, and SPP markets combined. Staff's first indication that the line would simultaneously deliver 3500 MW to the PJM system in Indiana and 500 MW to the MISO system in Missouri, for a total injection of 4000 MW, came in data request responses received from Grain Belt Express on September 2, 2014. All previous filings, orders, and studies were either ambiguous or consistent with a 3500 MW design, including the Kansas and Indiana orders,[66] FERC's order conditionally

[64] Ex. 206, Staff witness Kliethermes rebuttal, pp. 5, 19.
[65] Ex. 202, Staff witness Stahlman rebuttal, pp. 7-11.
[66] Ex. 201, Staff witness Beck Rebuttal, Schedule DB-3, Kansas Corporation Commission, *Order Approving Stipulation and Agreement and Granting Certificate*, Dec. 7, 2011, p. 2 ("The Application stated that one of the projects under development is the Grain Belt Express Clean Line (Grain Belt Express or

authorizing the proposal,[67] Grain Belt Express' Missouri application,[68] the SPP System Impact Study,[69] the Merchant Transmission Interconnection PJM Impact Study Report published in October 2014,[70] and information received from the Company as recent as November 3, 2014.[71] Moreover, although Grain Belt Express conceded that the prior orders from FERC, Indiana, and Kansas were based on a 3,500 MW design, Grain Belt Express witness Dr. Wayne Galli testified at the evidentiary hearing that he was not aware of any efforts on the part of the Company to notify those entities of the change in the project design.[72]

At this time, the project design includes a 4300 MW converter station in Kansas, a 1007 MW converter station in eastern Missouri, and a 3525 MW converter station in Illinois, which will simultaneously deliver up to 3500 MW of wind energy to the PJM system in Indiana and 500 MW to the MISO system in Missouri.[73] Staff is not aware of any completed studies based on the current project design that sufficiently estimate the expenditures needed to construct the project at this point. All studies to date either

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Project), which will be a 500 to 600 kV high-voltage direct-current (HVDC) transmission line capable of delivering 3,500 MW of power from Kansas to other loan centers"); *Id*., Schedule DB-5, Indiana Utility Regulatory Commission, *Order of the Commission*, May 22, 2013, p. 2 ("the Grain Belt Express Clean Line project…is an approximately 700-mile overhead, high voltage direct current ("HVDC") transmission line that is proposed to be built to deliver up to 3,500 megawatts ("MW") of wind power from western Kansas to communities in Missouri, Illinois, Indiana, and states farther east.").

[67] Federal Energy Regulatory Commission, *Order Conditionally Authorizing Proposal and Granting Waivers*, May 8, 2014, p. 2, ¶ 3 ("Grain Belt Express' Project is a 750-mile HVDC transmission system which will be capable of delivering up to 3,500 MW of power…The Project will include an intermediate converter station near the Maywood 345-kV substation in Missouri…").

[68] EA-2014-0207, *Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity*, March 26, 2014, p. 3, ¶ 6.

[69] Ex. 111, GBE witness Galli direct, Sch. AWG-4, Sept. 6, 2013, Grain Belt Express HVDC System Impact Study, Southwest Power Pool, pp. 7-8.

[70] Ex. 113, GBE witness Galli surrebuttal, Sch. AWG-10, Merchant Transmission Interconnection PJM Impact Study Report, October 2014, p. 14 ("The proposed X3-028 queue project consists of two 1750 MW, 600 kV DC transmission lines that connect the SPP system to the PJM System…").

[71] Ex. 210, Response to Staff Data Request No. 200, indicating a total injection at the Kansas converter station of 3755.8 MW.

[72] GBE witness Galli, Tr. Vol. 12, p. 471, ll.. 6-16; *Id*. at p. 473, l. 13-17.

[73] Ex. 113, GBE witness Galli surrebuttal, pp. 20-22.

focus on earlier project designs or are too preliminary to reliably indicate whether the Grain Belt Express project is economically feasible.

Grain Belt Express asserts that studies with the Missouri converter station at 1000 MW are unnecessary and further indicated at the evidentiary hearing that, for technical reasons, the Missouri converter station cannot and will not deliver over 500 MW.[74] However, in prefiled testimony and data request responses, Grain Belt Express witness Dr. Wayne Galli indicated that the Missouri converter station will be capable of continuously delivering up to 1000 MW and that the decision to limit the injection to 500 MW was based on market reasons, as opposed to technical limitations.[75] As such, and because the project design may still be evolving, any studies should review the Missouri converter station at its full capability, as opposed to the 500 MW limitation that Grain Belt Express is currently proposing.

Grain Belt Express alleges that its project will reduce retail rates in the state of Missouri; however, its own study shows Ameren Missouri retail rates increase. Grain Belt Express asserts that, based off of its adjusted production cost metrics, Ameren Missouri's cost of service would decrease by $1 million.[76] However, Grain Belt Express fails to consider the impact of the increase in overall magnitude of congestion caused by its project, which results in over a $1 million increase to Ameren Missouri's cost of service. To be clear, Staff cannot definitively say the project would increase Missouri

[74] GBE witness Galli, Tr. Vol. 12, p. 670-672.
[75] Ex. 111, GBE witness Galli Direct, p. 4, FN 1 ("The Maywood converter station…will be rated at 1,000 MW in the event market demand later necessitates it"); Ex. 113, GBE witness Galli surrebuttal. p. 21, ll. 20-21. *See also* Tr. 1684, ll. 13-25 (Dr. Wayne Galli's response to Staff Data Request 0162 indicated that "the converter station in Missouri will be designed with a maximum continuous rating capable of delivering a total of 1,000 megawatts to the MISO system in Missouri"); *Id*. at p. 1685, ll. 1-11 (Indicating that the converter station would be rated at 1007 MW to account for losses so that the converter station would be capable of continuously delivering 100 megawatts to the MISO system in Missouri.)
[76] Ex. 117, GBE witness Cleveland surrebuttal, p. 5, ll 20-22.

retail rates, because Grain Belt Express' study was not sufficiently robust, and certain assumptions it made are not reasonable. Staff witness Sarah Kliethermes testified that Grain Belt Express' modeling results cannot be relied upon for purposes of predicting the impact the project will have on Missouri retail rates because its analysis only modeled the MISO day-ahead market, without taking into account the MISO real-time and ancillary services markets. Additionally, Grain Belt Express modeled the entire eastern interconnect as a single market which under-recognizes the challenges of integrating wind energy.[77]

While Grain Belt Express asserts its multi-state project will not introduce any meaningful amount of new system variability,[78] Grain Belt Express' own evidence shows that its project may cause a need for between nine and fourteen MW of additional ramping capacity, such as a new gas combustion turbine, located within Ameren Missouri's service area.[79] Regarding Grain Belt Express' allegation that it is not reasonable to study the impact the project will have on prices in the MISO ancillary services market, Staff acknowledges that, in terms of quantity, most of the energy generated and purchased by Missouri utilities is transacted through the day-ahead markets; however, it is important to model the impact of the project on prices in the real-time and ancillary services markets, because much of the operational impact of integrating wind energy is dealt with in these markets.[80] For example, in evaluating Grain Belt Express' allegation that it is not reasonable to study the impact of its project on prices in the MISO ancillary services market, it is important to look at ancillary

[77] Ex. 206 Staff witness Kliethermes rebuttal, p. 5, ll.4-9.
[78] Ex. 120 GBE witness Berry surrebuttal p. 2, ll 14-16.
[79] Ex.110 GBE witness Zavadil surrebuttal p. 7, ll. 4-8; Ex. 212, Response to Staff Data Request 04.
[80] Ex. 206, Staff witness Kliethermes rebuttal, p, 1, 1. 4-8.

services on a netted basis of total transactions in the MISO wholesale markets (the day-ahead, real-time and ancillary services markets) because for a vertically integrated utility, which owns generation resources to serve its retail customers, in many hours the utility will be generating electricity only sufficient to serve its own load. It will sell that electricity into the wholesale market, but it will also buy from the market essentially what it generates, i.e., the net between what it sells into the wholesale market and what it buys from that market will be a very small amount. Ancillary services would be in addition to those wholesale market transactions, so during hours when large amounts of wind energy are injected, ancillary services would comprise a significant percent of what a utility owes in the wholesale market.[81]

Staff has determined that the quality of the data and reasonableness of the inputs Grain Belt Express used in the modeling is presented in both its direct and its surrebuttal case are not reasonable. The data and inputs Grain Belt Express used in its modeling are generic assumptions designed to be used for comparing test cases, not for predicting specific outcomes. These assumptions are not representative of Missouri or MISO loads, generator capacities or efficiencies, dispatch stack, generator bid amounts, wind deliveries, generator heat rate curves, transmission loading curves, nor are any of the other inputs used in Grain Belt Express' modeling representative of Missouri or MISO.[82] The generic, off-the-shelf data package that Grain Belt Express relied on to perform its modeling is inadequate when one is trying to predict the price of power at a certain location because it does not account for important factors in production modeling such as unit-specific heat rate curves, or Missouri-specific

[81] Staff witness Kliethermes Tr. Vol. 17, p 1576, l. 11 to p 1577, l.3.
[82] GBE witness Cleveland, Tr. Vol. 14, p. 1078, l. 11 to p. 1079, l. 19.

characteristics, such as specific fuel contracts that may cause a utility to modify its bid strategy.[83]

5. facilities and service promote the public interest

Grain Belt Express has not demonstrated that building its multi-state transmission line project promotes the public interest in Missouri.

Grain Belt Express asserts its multi-state transmission line project promotes the public interest on nine bases. Each base and Staff's argument against it follow:

1. *The Project will offer any customer participating in MISO and PJM access to low-cost wind energy, which today cannot be readily accessed by buyers in these power pools.*

Wind energy is currently accessible to buyers in the MISO and the remainder of the Eastern Interconnection.[84] MISO wind capacity and output continue to grow, increasing by five (5) and eleven (11) percent in 2013, respectively. Wind generated 7.4 percent of all energy in MISO in 2013, compared to 3.5 percent just three years earlier. The expansion of dispatchable wind resources has resulted in wind resources setting prices in over one-half of all intervals at an average price of - $11 per MWh.[85] Further, it is being made more readily accessible by regional transmission organization projects, such as the multi-value projects (MVP),[86] and the regional planning that allows for more economic placement of wind resources. [87] The MISO's 2011 MVP portfolio has two Missouri projects intended to relieve congestion from Iowa wind energy, which will have a combined benefit to Missouri between 1.8 and 3.2 times the cost of those

[83] Staff witness Kliethermes, Tr. Vol. 17, p. 1580, l. 25 to p. 1581, l. 10.
[84] Ex. 206, Staff witness Kliethermes rebuttal, Sch. SLK 2 & SLK 4.
[85] Ex. 206, Staff witness Kliethermes rebuttal, Sch. SLK-4-21.
[86] Ex. 206, Staff witness Kliethermes rebuttal, Sch. SLK-7.
[87] Ex. 206, Staff witness Kliethermes rebuttal, Sch. SLK-8.

projects.[88] Missouri buyers already have access to low-cost wind energy within the MISO footprint. These regional wind resources will continue to grow as the MISO's centralized transmission planning and expansion function identifies regional projects to increase access to wind energy while ensuring projects do not have adverse economic effects on MISO member's rate payers. Staff recognizes that Grain Belt Express' project would provide additional wind energy resources to Missouri, but based on the limited analysis presented by Grain Belt Express, it is uncertain at this time whether the wind energy transmitted from western Kansas would be more or less affordable than wind energy produced within the MISO footprint.

2. The Project enables cost-effective compliance with RES and RPS goals in Missouri and other states in the MISO and PJM region.

As Staff pointed out in its argument on the Tartan need for the facilities and service factor, of the electric utilities that must comply with the Missouri Renewable Energy Standard, only Union Electric Company, d/b/a Ameren Missouri, has not yet disclosed whether it has existing capacity and new contracts that will meet or exceed the 15% renewable energy standard target by 2021.[89] Whether any energy transmitted over this proposed transmission line would be used to satisfy the Missouri Renewable Energy Standard is, at best, questionable.

3. The Project reduces wholesale electricity prices in Missouri and throughout MISO and PJM.

Grain Belt Express' modeling of the regional transmission organization markets is too limited in scope and in method to confidently conclude the high-voltage direct current transmission line and converter stations will reduce wholesale electricity prices

[88] Ex. 206, Staff witness Kliethermes rebuttal, Sch. SLK-7.
[89] *Id*.

in Missouri, and the quality of the data and reasonableness of the inputs in its modeling for the year 2019 are suspect. Additional studies are required to sufficiently evaluate the impacts of the high-voltage direct current transmission line and converter stations on wholesale electricity prices in Missouri.

Grain Belt Express has modeled the impacts of the HVDC transmission line and converter stations on only the day-ahead power market, but it has not modeled their impacts on the real-time, ancillary services, or capacity markets. Staff witness Sarah L. Kliethermes testifies that it is necessary to model the impacts of the HVDC transmission line and converter stations on the real-time and ancillary-services markets, and possibly the MISO capacity market, and that, due to this modeling limitation, one cannot confidently conclude the HVDC transmission line and converter stations will reduce wholesale electricity prices in Missouri.[90] While Staff has concerns about the assumptions used by Grain Belt Express, based off of the analysis conducted by Grain Belt Express, Staff concludes that Ameren Missouri's cost of service would increase $1.3 million with the project.[91] This is because the project increases negative congestion. Negative congestion is a result of the dispatch of an energy resource outside of its economic merit and because other resources are being dispatched outside of their peak efficiency.[92] Grain Belt Express attempts to down play the effect of this congestion on LMP, but their own witness testified the project would increase the congestion component of LMP by two hundred fifty (250) percent.[93]

[90] Ex. 206, Staff witness Kliethermes rebuttal, p. 5.
[91] Staff witness Kliethermes Tr. Vol. 17, p 1584, ll. 5-19.
[92] Staff witness Kliethermes Tr. Vol. 17, p 1582, ll. 11-19.
[93] GBE witness Berry surrebuttal p. 10, ll. 9-11.

The increase in the absolute magnitude of congestion caused by the project may require the MISO to determine that it is appropriate to build additional transmission to alleviate the congestion. Unless Grain Belt Express is required by the Commission to pay for the full cost of any transmission upgrades necessitated by the injection of wind energy via their project, the cost of any transmission upgrades will ultimately be paid by ratepayers benefiting from the transmission upgrade as determined by the MISO. These transmission upgrade costs would further decrease any economic benefits of the project.[94]

Additionally, by modeling the entire Eastern Interconnection as a single market, Grain Belt Express under-recognizes the challenges of wind integration.[95] As previously stated, Grain Belt Express has not established the quality of the data and the reasonableness of the inputs used in its modeling of the RTO markets for (1) the load assumptions for the year 2019, (2) the generator capacities, efficiencies or dispatch stack, or bid amounts for the year 2019, (3) the wind delivery used for the year 2019, (4) the level of precision used in modeling factors such as generator heat rate curves, transmission loading curves, or other inputs to the PROMOD model it used.[96] The data and inputs Grain Belt Express relied upon are not specific to Missouri or the MISO and, therefore, should not be relied upon to determine the location marginal price of energy in Missouri or the MISO.[97]

[94] Staff witness Kliethermes Tr. Vol. 17, p 1582, l. 23 to p 1583, l. 3.
[95] Ex. 206, Staff witness Kliethermes rebuttal, p. 5.
[96] Ex. 206, Staff witness Kliethermes rebuttal, p. 19.
[97] Staff witness Kliethermes, Tr. Vol. 17, 1580, l. 25 to p. 1581, l. 10.

To sufficiently evaluate Grain Belt Express' assertion that the HVDC transmission line and converter stations would reduce wholesale electricity prices in Missouri, the production modeling studies, as described in Staff's conditions, are required.

4. Lower renewable energy compliance costs and lower wholesale electric prices will both result in decreased costs to end-use electric customers.

Since Staff is unable to conclude from what Grain Belt Express has provided that the HVDC transmission line and converter stations will result in lower renewable compliance costs (See Staff response to Grain Belt Express' first basis—*access to low-cost wind energy*) and lower wholesale electric prices in Missouri (See Staff response to Grain Belt Express' second basis—*cost-effective compliance with RES and RPS goals*), Staff is unable to agree with this assertion in the context of this case.

Further, although Grain Belt Express in its surrebuttal filing has modeled the effects of the fact that Missouri retail rates are offset by the profits that investor-owned utilities make by selling energy into the wholesale power market in response to Staff's criticism in rebuttal testimony,[98] that modeling was done without the benefit of studies addressing Staff's issues with Grain Belt Express' modeling of the regional transmission organization markets. [99] If Grain Belt Express does not commit that it will not seek any regional cost allocation of transmission system upgrades caused directly or indirectly by the HVDC transmission line and converter stations, then the modeling would need to include consideration of the cost to Missouri utilities of any socialized transmission system costs. As previously stated, any socialization of transmission upgrade costs to

[98] Ex 206, Staff witness Kliethermes rebuttal, p. 5.
[99] GBE witness Cleveland, Tr. Vol. 14, p. 1078, l. 11 to p. 1079, l. 19; Staff witness Kliethermes, Tr, Vol. 17, p. 1581, l. 17 to p. 1582, l. 4.

Missouri utilities would ultimately impact Missouri retail rates decreasing any economic benefit of the Grain Belt Express project.

5. *By delivering over 18 million megawatt-hours ("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.*

Grain Belt Express' modeling of the regional transmission organization markets is too limited in scope and in method to confidently conclude the HVDC transmission line and converter stations will reduce the need to generate electricity from fossil-fueled power plants.

Particular limitations Staff identified follow:

a. Only a day-ahead analysis was performed, so there is no attempt to identify the generation resources necessary to accommodate real-time variation from dispatch order.

b. No analysis of ancillary services was performed.

c. The day-ahead analysis appears to have been performed with flat hourly blocks of wind energy injection.

d. The quality of the data and the reasonableness of the inputs used for (1) load assumptions for the year 2019, (2) generator capacities, efficiencies, dispatch stack, or bid amounts for the year 2019, (3) the wind delivery used for the year 2019, (4) the level of precision used in modeling factors such as generator heat rate curve, transmission loading curves, or other inputs to the PROMOD model.[100]

Grain Belt Express' modeling underestimates the cost and complexity of integrating wind integration, because Grain Belt Express only performed modeling of the day-ahead energy market, and much of the operational impact of wind integration is dealt with through the real-time and ancillary services markets.[101] Additionally, Grain

[100] Ex 206, Staff witness Kliethermes rebuttal, p. 19.
[101] Ex. 206 Staff witness Kliethermes rebuttal, p, 11, ll. 4-8.

Belt Express' modeling appears to have used flat hourly blocks of wind injection. This assumption further underestimates the cost and complexity of integrating wind energy, which will vary within any given hour of the day. While a RTO may not give Grain Belt Express sub-hourly wind data for the purposes of modeling the effect of sub-hourly wind variation on RTO market prices and generation dispatch, Grain Belt Express does have the ability to request the RTO conducting the feasibility or interconnection study to study the sub-hourly effect of the wind variation on the RTO's market prices and generation dispatch.[102]

Grain Belt Express has only modeled the project for a wind injection of 500 MW into Missouri; however, Grain Belt Express has made conflicting statements as to whether the converter station could accommodate a larger energy injection. Grain Belt Express responded to a Staff data request indicating that the design parameters of the converter station will permit delivery of up to 1000MW of energy.[103] If the converter station is used to facilitate the injection of 1000MW of wind energy, the concerns that Staff has raised regarding the 500MW injection would be further exacerbated. Particularly, the need of regulating and ramping capacity and the impact of increased congestion would more than double.[104]

6. The Project allows Missouri to access affordable clean energy as increasing environmental regulation drives increased costs for and additional retirements of coal plants.

How future environmental regulation, such as the proposed EPA rule under section 111(d) of the Clean Air Act, will impact the need for wind energy in Missouri is too speculative at this time to rely on as a basis for granting Grain Belt Express a

[102] Staff witness Kliethermes Tr. Vol. 17, p. 1583, ll. 4-24.
[103] Staff witness Kliethermes Tr. Vol. 17, p. 1580, ll. 9-20.
[104] Ex. 206, Staff witness Kliethermes rebuttal, p. 30, ll. 3-7.

certificate of convenience and necessity.[105] Although, if Grain Belt Express builds its multi-state transmission line project, electricity from sources in southwest Kansas will become more available to supply demand in the MISO and the PJM footprints, and those sources, most likely, will predominately be wind-based.

7. *By enabling new generation sources and providing a major link between three major RTOs in the Eastern Interconnection, the Project will improve electric reliability and reduce seams issues between regions. This benefit is further discussed in the direct testimony of Dr. Wayne Galli and Robert Zavadil.*

Staff did not evaluate the impact of the HVDC transmission line and converter stations on seams issues between the SPP, the MISO and the PJM, but their impact may be limited by Grain Belt Express' plan, except in emergency situations, to only export electricity from the SPP footprint into the MISO and the PJM footprints.[106].

8. *Project will contribute to economic development in Missouri and in the broader region by providing construction, manufacturing and operations jobs and additional business for Missouri companies. This benefit is further discussed in the testimony of Dr. David Loomis.*

If built, the HVDC transmission line and converter stations will contribute to economic development in Missouri; however, Dr. Loomis' study results are rough gross estimates,[107] and his estimate of the number of full-time equivalent workers Grain Belt Express will hire for the long-term operation and maintenance of the high-voltage direct current transmission line and converter stations is much higher than Grain Belt Express' expectation.[108]

9. *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*.

[105] Ex. 208, Staff witness Lange surrebuttal, p. 2.
[106] Ex. 202, Staff witness Stahlman rebuttal, p. 6.
[107] Ex. 202, Staff witness Stahlman rebuttal, p. 17.
[108] Ex. 209, Staff witness Stahlman surrebuttal, p. 3.

Staff understands that Grain Belt Express when it uses the term "Project" it means the approximately 750-mile HVDC transmission line from southwest Kansas to Indiana, and associated converter stations in Kansas, Missouri and Illinois, as well as the AC tie line into the Sullivan substation in Indiana, but not the AC collector system in Kansas or any of the upgrades the SPP, the MISO or the PJM may require for interconnection with the transmission systems in their footprints. Since the regional transmission organization-required upgrades are transmission costs that may be socialized, depending upon the upgrade and how the regional transmission organization assesses the costs of the upgrade, it may be that costs caused by the Project may be socialized. Further, while Grain Belt Express is not seeking socialization of the Project costs at this time, it has not foregone the possibility of seeking socialization of transmission costs in the future.[109]

As previously stated, Staff is concerned that Grain Belt Express is overlooking the fact that the Project, as it has been modeled, will cause a significant amount of congestion near the point of injection, which may necessitate the construction of transmission upgrades. The cost of any transmission upgrades will ultimately be paid by ratepayers benefiting from the transmission upgrades as determined by the MISO. These transmission upgrade costs would further decrease any economic benefits of the Project.[110]

[109] Ex. 206, Staff witness Kliethermes rebuttal, p. 10.
[110] Staff witness Kliethermes Tr. Vol. 17, p 1582, l. 23 to p 1583, l. 3.

2. If the Commission grants the CCN, what conditions, if any, should the Commission impose?

Rather than restating here each of the conditions Staff has listed in the introduction of this brief, Staff explains its rationale for them here. To address easement concerns such as those raised at the local public hearings, Staff is recommending the conditions numbered one through four in the introduction, including all the subparts of four.[111] For reasons that are self-evident from the conditions themselves, which originate from other state decisions for Grain Belt Express' project and a proposed order in Illinois for its Rock Island Express affiliate, Staff is recommending the Commission adopt the conditions numbered five through eleven, except that Staff is also recommending the condition numbered eleven to address Staff's concern about the willingness of the investors in Grain Belt Express for financing this multi-state project as it progresses.[112]

Staff is recommending the condition numbered twelve to address Staff's concerns with retail rate impact on Missouri customers of investor-owned utilities from the electricity this project may allow to be injected into Missouri.[113] Staff is recommending the condition numbered thirteen for more assurance that commitments expressed by Grain Belt Express employees are commitments by Grain Belt Express. To address operational safety of the HVDC transmission line segment, AC lines, and

[111] Ex. 201, Staff witness Beck rebuttal, p. 12, l. 10 to p. 13, l. 15.
[112] Ex. 201, Staff witness Beck rebuttal, p. 13, l. 17 to p. 15, l. 17; Ex. 204, Staff witness Murray rebuttal, p. 7, l. 12 to p. 9, l.10 and p. 10, l. 5 to p. 11, l. 3; Staff witness Murray, Tr. 1430, l. 15 to Tr. 1431, l.12 and Tr. 1433, l.13 to Tr. 1434, l. 22.
[113] Ex. 206, Staff witness Kliethermes rebuttal.

converter station in Missouri, including their impacts on other nearby facilities, Staff is recommending the conditions numbered fourteen through twenty-one.[114]

Finally, Staff is recommending the conditions numbered 22 and 23 to evaluate the potential benefit of more energy being delivered into Missouri over the HVDC transmission line than the 500 MW of capacity for which Grain Belt Express is requesting and to ensure the converter station in Missouri is built, respectively.

3. If the Commission grants the CCN, should the Commission exempt Grain Belt Express from complying with the reporting requirements of Commission rules 4 CSR 240-3.145, 4 CSR 240-3.165, 4 CSR 240-3.175, and 3.190(1), (2) and (3)(A)-(D)?

Except for the annual report filing requirement of rule 4 CSR 240-3.165, for which Grain Belt Express does not need relief since it "agrees to file with the Commission the annual report that it files with FERC,"[115] because the Commission has granted similar relief to transmission only public utilities in the past and because this Commission will not rate regulate Grain Belt Express, this Commission should grant the requested relief, but as to rule 4 CSR 240-3.145 only to the extent that rule would require Grain Belt Express to file its FERC-approved tariff with this Commission.[116]

Conclusion

For all the foregoing reasons, Staff recommends the Commission find Grain Belt Express is a public utility that requires a certificate of convenience and necessity from the Commission to operate in the state of Missouri, but find Grain Belt Express has not

[114] Ex. 203, Staff witness Lange rebuttal; Staff witness Lange, Tr. 1648, l. 8 to Tr. 1652, l. 8; Ex. 205, Staff witness Leonberger rebuttal; Staff witness Leonberger, Tr. 1700, l. 10 to Tr. 1710, l. 18.
[115] Ex. 201, Staff witness Beck rebuttal, p. 16.
[116] Ex. 201, Staff witness Beck rebuttal, p. 15, l. 19 to p. 16, l. 15.

shown that segment of its multi-state HVDC transmission line that would cross Missouri or its proposed converter station to be located in Ralls County, Missouri, are needed, economically feasible or promote the public interest and, therefore, not grant Grain Belt Express a certificate of convenience and necessity for them.

However, if the Commission finds Grain Belt Express has shown the transmission line and converter station are necessary or convenient, then Staff recommends the Commission limit the authority it gives in that certificate to require that the entire multi-state HVDC transmission line be built with dedicated metallic return conductors and with protection and control safety systems that will automatically de-energize it when an abnormal or fault condition occurs, impose each of the conditions on that certificate that Staff is recommending, grant Grain Belt Express relief from complying with Commission rules 4 CSR 240-3.145, 4 CSR 240-3.175, and 3.190(1), (2) and (3)(A)-(D), and explicitly state in its order that the grant of the certificate of convenience and necessity is not a determination of the ratemaking treatment of the costs associated with the transmission line or converter station in Missouri.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile or electronically mailed to all counsel of record this 8th day of December, 2014.

/s/ Nathan Williams