BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Grain Belt Express, LLC for a Siting Permit for the Construction of Two 345 kV Transmission Lines and Associated Facilities through Gray, Meade, and Ford Counties, Kansas.	))))	**24-GBEE-790-STG**

STAFF DIRECT TESTIMONY

PREPARED BY

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UTILITIES DIVISION

KANSAS CORPORATION COMMISSION

JULY 3, 2024

[REDACTED VERSION]

****[redacted]** Denotes Confidential Information**

INTRODUCTION

Q. Would you please state your name and business address?

A. My name is Paul Owings. My business address is 1500 Southwest Arrowhead Road, Topeka, Kansas, 66604.

Q. By whom and in what capacity are you employed?

A. I am employed by the Kansas Corporation Commission (Commission) as Deputy Chief Engineer of the Utilities Division.

Q. Please state your educational and employment background.

A. I received Bachelor and Master of Science Degrees in Civil Engineering from Kansas State University, Manhattan, Kansas. I have worked in various capacities as an engineer for the past 12 years. I am licensed as a professional engineer in the state of Kansas. For the last six months, I have assisted the Kansas Corporation Commission in matters dealing with electric utility operations. I have also performed functions including assisting in the management of the pipeline safety program, working on open dockets relating to engineering, and the administration and enforcement of the underground utility damage prevention program. Prior to working for the Commission, I worked as a Civil Engineering consultant performing design and construction contract administration for a variety of utility and development projects.

SUMMARY OF TESTIMONY

Q. Please describe the transmission lines discussed in this Docket.

A. Grain Belt Express LLC (Grain Belt Express or GBE or Applicant) is proposing to construct two new 345,000 volt (345 kV) alternating current (AC) transmission lines. The first line will be approximately 46-miles in length across portions of Gray, Meade, and

Ford Counties (Meade Line). The second line will be approximately 16 miles in length traversing a portion of Ford County (Bucklin Line).

Q. What does the Application request from the Commission?

A. K.S.A. 66-1,178 (b) obliges the Commission to determine the necessity for and the reasonableness of the location of the proposed electric transmission lines.

Q. What is the purpose of your testimony?

A. My testimony provides Staff's perspective and recommendations regarding the necessity and reasonableness of the proposed electric transmission lines and covers other miscellaneous topics for contextual purposes.

HISTORY, SCOPE, COSTS, AND COST ALLOCATION

Q. Please summarize GBE's past filings with the Commission and the Commission's corresponding Orders.

A. On March 7, 2011, GBE filed an application with the Commission requesting a Certificate of Convenience and Necessity (COC).[1] The Commission granted a transmission-only COC to GBE on December 7, 2011 pursuant to its *Order Approving Stipulation and Agreement and Granting Certificate* (11-624 Order).[2] This Order granted GBE a transmission-only certificate for a 300 mile long High Voltage Direct Current (HVDC) beginning near Spearville, Kansas and ending near Atchison. The Order also granted GBE a COC to build an alternating current (AC) collector system in the geographic territory denoted as "western Kansas". On July 15, 2013, GBE filed an application for a line siting permit for the HVDC portion of the project in Kansas.[3] The Commission issued an Order Granting a

[1] Docket No. 11-GBEE-624-COC, *Application* (Mar. 7, 2011).
[2] Docket No. 11-GBEE-624-COC, *Order Approving Stipulation & Agreement and Granting Certificate* (Dec. 7, 2011).
[3] Docket No. 13-GBEE-803-MIS, *Application* (July 15, 2013).

Transmission Line Siting Permit to GBE relating to the HVDC transmission line on November 7, 2013.[4] On January 28, 2020, Grain Belt Express was acquired from Clean Line Energy Partners LLC (Clean Line) by Invenergy Transmission LLC (Invenergy Transmission or Invenergy). The Commission granted approval of the transaction pursuant to its Order on Unanimous Settlement Agreement (Settlement Agreement), issued on June 18, 2019, in Docket No. 19-GBEE-253-ACQ (Acquisition Docket). On March 10, 2023, GBE filed a *Motion to Amend the Unanimous Agreement* in the Acquisition Docket allowing GBE to construct utilities in two phases.[5]

Q. Please summarize the terms of the Settlement Agreement in the Acquisition Docket.

A. The Settlement Agreement terms from the Acquisition Docket are summarized below:

- GBE shall file documents with the Commission detailing commitment of funds in an amount equal to or greater than the total cost to build the entirety of the multi-state transmission project prior to construction.

- GBE shall estimate decommissioning costs within ten (10) years after the Commercial Operation Date of the project and establish a fund to facilitate future decommissioning.

- Invenergy Transmission must recover costs associated with the GBE Project through the rate authority granted by the Federal Energy Regulatory Commission (FERC). If GBE seeks to recover costs by other methodology affecting Kansas rate payers, GBE is required to file an Application with the Commission to amend its Certificate.

- FERC preempts the KCC relating to rate making unless Invenergy or GBE acts outside the conduct covered by FERC jurisdiction, at which time the KCC will determine the applicability of K.S.A. 66-1403.

- The Sunset Term in Docket No. 13-GBEE-803-MIS was replaced with new conditions that prescribed project milestones to acquire easements and finance the project.

[4] Docket No. 13-GBEE-803-MIS, *Order Granting Siting Permit* (Nov. 7, 2013).

[5] Docket No. 19-GBEE-253-ACQ, *Order Granting Motion to Amend the Unanimous Settlement Agreement* (June 13, 2023).

- GBE must provide the number of Kansas easements obtained, significant Kansas landowner contacts, significant outreach events in Kansas, and significant communications sent to Kansas landowners in quarterly reports.

- GBE shall maintain sufficient personnel in Kansas after the GBE Project becomes operational.

Q. Does the Settlement Agreement apply to the AC Collector Lines?

A. Yes. The AC Collector Lines are a critical part of the GBE Project, and the AC Collector System is referred to in the Settlement Agreement.

Q. Please summarize the scope of the whole GBE Project.

A. The 11-624 Order permitted GBE to construct and operate a ±600 kV HVDC transmission line, converter stations, and associated facilities to connect the converter stations to the RTOs, and an AC Collector System comprised of AC Collector Lines (GBE Project). Implementation of the GBE Project is anticipated in two phases pursuant to the Amended Settlement Agreement in the Acquisition Docket. Phase 1 of the GBE Project developments electrical transmission infrastructure necessary to provide 2,500 MW of power into Missouri.[6] Phase 2 of the GBE Project develops an additional 2,500 MW of power to be provided to PJM Interconnection, LLC (PJM).

Q. Please describe Phase 1 of the project.

A. Starting at the point of power generation, Phase 1 consists of:

(1) two 345 kV transmission lines as the first part of the AC Collector system;

(2) a converter station and associated facilities in Ford County, Kansas;

(3) an HVDC transmission line between the Kansas converter station and the converter station in Missouri;

(4) a converter station in Monroe County, Missouri; and

[6] Direct Testimony of Kevin Chandler; p. 18, line 3 (May 31, 2024).

(5) AC facilities connecting the Missouri converter station to points of delivery in Missouri.[7]

Q. Please describe Phase 2 of the project.

A. Starting again at the point of generation, Phase 2 will consist of:

(1) an expansion of the AC Collector system connecting generation to the Ford County converter station;

(2) additional component buildout at the Ford County, Kansas converter station;

(3) an extension of the HVDC transmission line beginning at the converter station in Monroe County, Missouri and then traversing east to a converter station in Clark County, Illinois;

(4) An additional converter station in Clark County, Illinois; and

(5) AC facilities connecting the Illinois converter station to a point of interconnect in Indiana.[8]

Q. What is the scope of the portion of the GBE Project being considered as a part of this docket?

A. The portion of project that is the focus of this Docket is two AC Collector Lines which comprise the first phase of a collector system to deliver power to the Ford County converter station. GBE is proposing to construct a new 345 kV double circuit AC transmission line approximately 46-miles in length across portions of Gray, Meade, and Ford Counties (Meade Line) and a 345 kV AC transmission line approximately 16 miles in length traversing a portion of Ford County (Bucklin Line).[9] The proposed origination point of the

[7] Application for Transmission Line Siting Permits; p. 5, item 11 (May 31, 2024) (Application).
[8] *Id.*
[9] Direct Testimony of Kevin Chandler; p. 4, lines 12-16 (May 31, 2024).

Meade Line is near the intersection of 12 and F Road in Meade County, Kansas. The Bucklin Line begins near the intersection of Whirlwind and 131 Road in Ford County, Kansas. Both lines terminate at the converter station near the intersection of Ford Ensign and 118 Road in Ford County, Kansas. Additional description of the proposed transmission routes is included in subsequent sections of this testimony.

Q. What are the estimated costs for the proposed AC Collector Project?

A. The Meade line cost is estimated to cost $135 million, and the Bucklin Line cost is estimated to cost $40 million.[10]

Q. How will the costs of the GBE Project affect the rates paid by Kansas retail customers?

A. The GBE Project is a "merchant" transmission line. Kansas retail customers will not pay for the cost of the GBE Project. The Cost of the AC Collector Lines will be paid for by generation projects seeking interconnection into the Grain Belt Express HVDC Line.[11]

NECESSITY, BENEFITS, AND ECONOMIC DEVELOPMENT

Q. How does staff assess necessity relative to transmission line siting?

A. As per K.S.A. 66-1,180,[12] Staff considers benefits afforded by the proposed transmission lines to consumers in Kansas and consumers outside of Kansas, and economic development benefits of the project in Kansas.

[10] Direct Testimony of Kevin Chandler, p. 11, lines 18-19 (May 31, 2024).
[11] *Id.*, p. 4, lines 12-16.
[12] 66-1,180. Same; siting; proceedings; permit. All hearings conducted pursuant to this act shall be in accordance with the provisions of the Kansas administrative procedure act. All such hearings shall be completed within 30 days after the commencement thereof, unless the electric utility requests a continuance of any such hearing. All costs of any hearing pursuant to this act shall be taxed against the electric utility. The commission shall make its decision with respect to the necessity for and the reasonableness of the location of the proposed electric transmission line, taking into consideration the benefit to both consumers in Kansas and consumers outside the state and economic development benefits in Kansas. The commission shall issue or withhold the permit applied for and may condition such permit as the commission may deem just and reasonable and as may, in its judgment, best protect the rights of all interested parties and those of the general public.

Q. Should the Commission consider the necessity of the GBE Project as a whole and the AC Collector Lines individually as a part of this Docket?

A. The Commission should consider the necessity of both the GBE Project as a whole and the AC Collector Lines specifically. The necessity of the AC Collector Lines is dependent on the GBE Project as a whole being necessary, and therefore, both the necessity of the GBE Project as a whole and the necessity of the specific AC Collector Lines being proposed should be considered.

Q. Does the GBE Project as a whole benefit Kansas consumers?

A. The primary purpose of the GBE project is to provide renewable energy to customers outside of Kansas. Kansas consumers may benefit indirectly from the GBE Project, although these benefits are uncertain and do not relate directly to the purpose of the GBE Project. However, I believe the potential benefits the project may deliver to Kansas electricity consumers are sufficient to conclude the project is beneficial.

Q. Please describe the potential benefits you believe the project will provide to Kansas electricity consumers.

A. Two potential indirect benefits to Kansas consumers relate to power reliability and potential future rate savings.

Q. Please describe benefits relating to power reliability in more detail.

A. In terms of reliability, Invenergy states the GBE Project will have the operational capability to reverse power flow potentially providing power from MISO or PJM to Kansas in the event of an emergency or grid outage in the SPP.[13] GBE indicated bidirectional power flow is inherent to the design of the converter station, however, operational procedures to

[13] Direct Testimony of Kevin Chandler; p. 13, lines 11-12 (May 31, 2024).

implement power flow reversals are not currently available and will require additional coordination with the Regional Transmission Organizations (RTOs).[14] Although speculative at this time, the potential of reversing power flow and delivering it into the SPP grid should be considered as a benefit to electricity consumers.

Q. Please describe benefits relating to potential future rate savings in more detail.

A. Another potential benefit to Kansas consumers relates to potential future rate savings. Kansas wind generation has the capability to exceed current transmission capacity. Overgeneration of power causes congestion on electric transmission lines, initiating the need for additional electric transmission projects. Kansas consumers must pay for a portion of the electric transmission line improvement costs if additional transmission line construction is required by SPP. The GBE project will potentially provide 5,000 MW of additional transmission capacity to the area. Because GBE is merchant funded, it does not impact retail electric customers in Kansas and provides additional transmission capacity, therefore providing potential rate savings to Kansas consumers.

Q. Does the GBE Project as a whole provide economic benefits within Kansas?

A. The GBE Project exports renewable wind generation power from Kansas to eastern transmission regions.[15] Having additional capacity to export power will most likely stimulate the wind generation industry (or other power generation industries) resulting in investment in Kansas. In this respect, the GBE Project as a whole has a high probability of providing economic benefits within Kansas.

[14] Response to Staff Data Request 36.
[15] Application, p. 4, ¶ 6 (May 31, 2024).

Q. Please describe how the GBE Project as a whole benefits consumers outside of Kansas.

A. Consumers outside of Kansas will have access to renewable energy generated within Kansas. Additionally, the project improves reliability of other service areas by providing access to additional generation resources. Unlike the potential for back feeding power to Kansas consumers, the GBE Project is being primarily configured to power other regions from Kansas, and therefore the benefit is direct.

Q. What is the basis for your conclusion that the Project will provide benefits to consumers outside of Kansas?

A. Primarily, I based my conclusions on the findings of the public utility commissions in Missouri and Illinois. The direct testimony of GBE witness Kevin Chandler quotes statements from Missouri Public Service Commission (MPSC) and the Illinois Commerce Commission (ICC) in which the two commissions agreed with GBE's assessment that the Project will benefit consumers outside Kansas.

Q. Please discuss the necessity of AC Collector Lines relative to HVDC transmission lines.

A. AC Collector Lines are a necessary component of the proposed HVDC transmission system to control and aggregate multiple power sources to the central converter station. Multiple generators, most likely consisting of wind farms, will require interconnection with the HVDC converter station to fully power the HVDC transmission line. Wind farms transmit power from multiple wind turbines to an endpoint using generator tie lines. A connection to a transmission line is made at the end of the generation tie line. Since multiple wind farms will be required to power the HVDC transmission line, the AC Collector Lines will

act as a central feeder to the converter station. This coordinated effort will improve the efficiency of electric transmission to the converter station by aggregating the generation tie lines. Aggregation of generation tie lines should mitigate land impacts.

Q. What are the physical differences between transmission lines and generator tie lines?

A. Physically, electric transmission lines and generator tie lines are very similar if not the same infrastructure. The difference between the two primarily relates to how they are regulated.

Q. What is the difference between a transmission line and generator tie line in terms of regulatory requirements?

A. Generation tie lines from wind generation facilities are exempt from line siting requirements in Kansas. This is because the owning entities of such facilities often elect to opt-out of Commission regulation pursuant to K.S.A. 66-104(e)(1). For owning entities who are not already a certified public utility in the state, opting out means such entity does not have to undergo the process of becoming a public utility. The flip side of that exemption is that the owning entity of such a line, without public utility status, does not have eminent domain authority to build those lines. The size of the AC Collector Lines require a line siting process, which can only be undergone by a Kansas public utility. GBE is a public utility in the state of Kansas. If the Commission approves GBE's Application, GBE, as the owning entity and as a Kansas public utility, will have eminent domain authority with respect to the build out of the lines.

Q. Are the AC Collector Lines a necessary component of the GBE Project?

A. Yes. The AC Collector Lines will result in less encumbrance of the landscape and property owner rights by aggregating renewable energy resources on common lines. For example,

** ** future renewable resources have expressed interest and provided funds to GBE to study interconnection.[16] Construction of generator tie lines from each resource would create a bigger impact than the aggregated generator tie lines.

Q. Will generation tie lines be required despite the AC Collector Lines?

A. Yes. Generation tie lines will be required to connect wind farms or other generators to the AC Collector Lines. The exact extent and location of generation tie lines has not been established by Grain Belt Express and will depend on interconnection agreements with other entities.

Q. How does the necessity of this line siting docket relate to necessity considerations in the GBE COC docket (11-624 Docket)?

A. The 11-624 Order considered the necessity of the GBE Project as a whole including the AC Collector System for the HVDC transmission line, see the following paragraph from the order:

> (a) Transmission Only Certificate for HVDC transmission line with AC Collector System: Clean Line should be granted a Transmission Only Certificate of Public Convenience and Necessity pursuant to K.S.A. 66-131, to operate as a public utility in Kansas and construct and operate a HVDC transmission line, and associated facilities as contemplated by its Application, including converter stations, lines to connect the converter stations to the SPP, and an AC Collector System comprised of AC gathering lines needed to connect generators in western Kansas.[17]

Since the 11-624 Docket specifically considered the proposed transmission lines, the necessity of the AC Collector Lines has been partially considered in the past. However, specific details of the AC Collector Lines have not been considered by the Commission

[16] Response to Staff Data Request 3.

[17] Docket No. 11-GBEE-624-COC, *Order Approving Stipulation & Agreement and Granting Certificate,* p. 9 ¶22(a) (Dec. 7, 2011).

such as the location of the lines, their length, and the quantity of lines necessary to supply the HVDC line.

Q. Did the 11-624 Docket provide any insight into defining the geographical region of "western Kansas"?

A. No. Staff presumes it is related to the immediate counties that are adjacent to Spearville. However, a more precise definition has never been proposed by GBE or by the Commission.

Q. What is your opinion about the necessity of the proposed and future AC Collector Lines?

A. The GBE Project provides economic benefits to Kansas and potentially provides indirect benefits to Kansas consumers. The AC Collector Lines are a necessary component of the GBE Project as a whole. Therefore, in my opinion, the proposed AC Collector Lines are necessary for this phase of the GBE Project.

Q. How will the completed AC Collector System impact local landowners?

A. The AC Collector System will impact local property owners who may not directly benefit from the electric transmission lines. Staff contends that GBE has an obligation to minimize local property owner impacts. Accordingly, the AC Collector System as a whole should be planned and implemented in an efficient manner that minimizes property owner impacts while fully powering the HVDC transmission line.

Q. Please describe the standard of care GBE should follow when developing their AC Collector System.

A. GBE should be held to the same standard of care as retail electric providers in Kansas. K.S.A. 66-1,171 requires retail electric providers to develop electric service in an orderly

manner by avoiding wasteful duplication, avoiding unnecessary encumbrances of the landscape, preventing waste of materials and natural resources, facilitating the public convenience and necessity, and minimizing disputes between retail electric suppliers which may result in inconvenience, diminished efficiency, and higher costs in serving the consumer.

Q. Are there plans to further develop the AC Collector System?

A. I suspect additional AC Collector Lines will be required. However, specific information regarding long term development of the AC Collector System has not been provided to Staff.

Q. How can GBE improve development of the AC Collector System?

A. Staff is unaware of future AC Collector System improvements. Staff recommends the Commission require GBE to develop a long-term master plan associated with AC Collector System build out before filing additional AC Collector Line Siting Applications with the Commission.

Q. Should a precise definition of the AC Collector System's geographic region be established as a part of the AC Collector System master plan?

A. Yes. The 11-624 Order did not prescribe a specific geographic region for the AC Collector System. At this point in the project, GBE should be able to predict a narrower region than "western Kansas" to limit AC Collector System development. Specifically defining the region is consistent with orderly development of the AC Collector System and is necessary to determine the reasonableness of future transmission lines.

Q. Will using dual circuits improve the efficiency of the transmission lines?

A. Yes. GBE is considering use of double circuit to allow more generation interconnections at the substations where the proposed lines begin. This design would minimize the total amount of AC Collector Lines that will converge on the converter station.[18]

Q. Should GBE be required to double circuit the transmission lines?

A. If the potential capacity in the area is available, GBE should be required to double circuit the transmission lines in the AC Collector System. This approach will reduce the number of additional transmission lines, avoid unnecessary encumbrance of the landscape, and it will mitigate property owner impacts.

Q. Would this requirement be an additional cost to GBE?

A. Yes. However, GBE has already stated they are considering a dual circuit option to allow for future growth, and in my opinion, the initial construction of the project is the only opportunity to effectively construct this portion of the collector system as a double circuit. Without a double circuit option, we can be assured of additional transmission line routes being built to the Ford County converter station and further encumbrance of the landscape in order to provide sufficient inlet supply to the converter station.

Q. Other than property owner encumbrances, could the GBE project harm Kansas consumers in any other way?

A. Yes. If the collector system transmission lines suffered an unplanned outage, there is a possibility that the sudden drop of 1000 to 1500 MW of power could result in a transient effect on the local electric grid before the GBE control system has the ability to isolate the system. This very short power disturbance could pass through the local interconnect resulting in a decrease in power quality within Kansas consumer electrical service areas.

[18] Response to Staff Data Request 17.

Q. What is the probability of Kansas Consumers having power quality problems in the vicinity of the interconnect?

A. To Staff's knowledge, power quality implications associated with the interconnect has not been fully studied, and therefore, the risk of power quality problems is uncertain.

Q. Could this have economic implications?

A. Yes. There are several large industries in and around Dodge City who would be substantially affected by a decrease in power quality.

Q. Would you recommend a study be completed to ensure this issue is mitigated?

A. Yes. Staff recommends GBE complete a power quality study to evaluate the potential for decreased power quality in Kansas service areas as a result of the GBE Project and propose measures to mitigate decreases in power quality.

Q. Who should fund the costs of mitigating power quality problems?

A. Should mitigation measures be required, retail rate payers in Kansas should not be responsible to pay for mitigation measures. Staff recommends GBE pay for mitigation measures, therefore passing the cost to entities who directly benefit from the GBE Project.

REVIEW OF ROUTE SELECTION METHODOLOGY

Q. Please describe the Commission's role in reviewing the electric transmission line route.

A. K.S.A. 66-1,180 requires the Commission to determine if the proposed transmission line route is reasonable. In reaching a decision, the Commission may prescribe conditions on the route that best protect the rights of all interested parties provided such conditions are just and reasonable.

Q. How did Staff assess the Bucklin and Meade Routing Study?

A. Staff reviewed the Applicant's testimony and corresponding reports to confirm the Applicant completed the following in a reasonable manner:

1. **Start and end point development:** selected reasonable locations to begin and end transmission lines.
2. **Study area identification:** identified a study area of sufficient size and scope to develop numerous alternate routes for consideration and comparison.
3. **Alternate route establishment:** established a significant number of alternate routes that could be compared based on a wide range of potential impacts.
4. **Alternate route comparison:** compared routes in a fair and objective manner utilizing transparent methodologies and criteria.
5. **Local issue consideration:** made an effort to solicit and incorporate public input from interested entities.
6. **Route selection:** Selected a route in a logical manner using available data in a fair and transparent way.

Q. Did GBE contract with a consultant to prepare a routing study?

A. Yes. GBE contracted with Burns & McDonnell to prepare a routing study. Refer to Jamie Precht's Direct Testimony which introduces the Grain Belt Express LLC *Kansas AC Collector System Routing Study* (Routing Study) dated May 2024.

Q. Please summarize the route selection process.

A. A four-step process was utilized to select routes including: (1) study area phase, (2) alternative route network phase, (3) public involvement phase, and (4) proposed route selection phase and final adjustments to proposed routes.[19]

[19] Direct Testimony of Jamie Precht; p. 6, lines 4-8 (May 31, 2024).

Q. Can you describe the start and end points of the AC Collector Lines?

A. The line siting application proposes two AC Collector Lines, the Meade and Bucklin Lines. The start point of the Meade Line is near the intersection F and 12 Road in Meade County, Kansas. The intersection is approximately 10 miles northwest of Meade, Kansas. The start point of the Bucklin Line is near the intersection of Whirlwind and 131 Road in Ford County, Kansas. The intersection is approximately 1.75 miles north of Bucklin, Kansas. The endpoint for both lines is located near the intersection of Ford Ensign and Bloom Road in Ford County, Kansas. The intersection is approximately 10.3 miles southeast of Dodge City, Kansas.

Q. Can you describe how the start and end points of the AC Collector Lines were selected?

A. The start point of the Meade Line was selected to "accommodate renewable energy projects in the vicinity of Meade County."[20] The start point of the Bucklin line was selected to "facilitate interconnection with renewable energy projects under development in Ford and adjacent counties."[21]

The endpoints for both AC Collector Lines is the GBE Kansas converter station. The location of the converter station corresponds to the beginning of the HVDC transmission line which was established in the 13-803 Docket.

Q. Has GBE received interconnection requests?

A. Yes. GBE has received ** [redacted] ** interconnection requests and ** [redacted] ** in study fees. Additionally, some of the projects have collectively contributed approximately

[20] Direct Testimony of Kevin Chandler; p. 7, line 12 (May 31, 2024).
[21] *Id.* lines 14-15.

** [redacted] ** in deposits. Of the ** [redacted] ** interconnection requests, ** [redacted] ** [22] Apparently, the origination points were selected based on the relative proximity to these renewable energy projects.

Q. Was the methodology used to select the start points of the AC Collector Lines reasonable?

A. The location of the start points is based on potential interconnection agreements and appears to be speculative. Constructing the AC Collector Lines without interconnection agreements could needlessly impact property owners, in the scenario where GBE does not acquire interconnection agreements or generation is not developed. Therefore, Staff recommends the Commission condition construction of the AC Collector Lines on acquisition of interconnection agreements. Furthermore, if interconnection agreements are not formed and the AC Collector Lines are not constructed, GBE should relinquish easements back to property owners.

Q. Has the Commission imposed a condition similar to this in past proceedings?

A. The Settlement Agreement conditioned installation of transmission facilities in Kansas based on commitment of funds. Additionally, the Settlement Agreement contemplated decommissioning the facility which included terminating all transmission line easements. Adding conditions relating to the installation and removal of the facility has been completed in the past.

Q. Regarding the downstream endpoint of the AC Collector lines, do you consider that endpoint to be reasonable?

[22] Response to Staff DR 3.

A. Yes. Locating the AC Collector Line end point at the AC converter station is reasonable and necessary to interconnect with the remainder of the GBE Project, which was approved in the 11-624 Docket and sited in the 13-803 Docket.

Q. How was the scope of route study limited?

A. Study areas were developed to limit the scope of the route study based on the start and end points of the two lines, publicly available data, and other constraints.[23]

Q. Can you describe the study areas?

A. The Meade study area measured approximately 30 miles east-west and 18 miles north-south consisting of approximately 268,846 acres of land.[24] The Bucklin study area measured approximately 15 miles east-west and 10 miles north-south consisting of approximately 85,300 acres.[25]

Q. Was the methodology utilized to select the study areas reasonable?

A. Yes, in my opinion the study area selection methodology was reasonable. Furthermore, the size of the study areas was large enough to establish multiple possible routes for comparison. Aside from the speculative nature of the start points discussed above, I believe the methodology used to develop the study areas was reasonable.

Q. How were alternate routes developed?

A. The Applicant developed an initial, extensive, and very broad network of possible routes to connect the start and end points of the Meade and Bucklin Lines. [26] Each route was comprised of numerous shorter interconnecting links. Combinations of links formed

[23] Direct Testimony of Jamie Precht; p. 6, lines 8-10 (May 31, 2024).
[24] Grain Belt Express LLC *Kansas AC Collector System Routing Study*, p. 1-2, Section 1.2 (May 2024).
[25] *Id.*, p. 1-1, Section 1.1.
[26] Direct Testimony of Jamie Precht; p. 9, lines 5-13 (May 31, 2024).

various alternate routes. The Applicant modified the broad network of routes based on routing principles, evaluation factors, feedback from agencies, and GBE's standards.

Q. Can you describe the route links and alternate routes?

A. The Meade Line alternate routes were comprised of 75 route links.[27] The Bucklin Line alternate routes were comprised of 46 route links.[28] A majority of the route links, for both AC Collector Lines, appear to follow roadways. However, route links were also added to parallel existing 115 kV transmission lines, an abandoned railroad line, and in a few cases undeveloped area along parcel lines. The route links were combined to form 6,152 unique routes for the Meade line and 696 unique routes for the Bucklin Line.[29]

Q. What were the routing principles utilized in the Routing Study?

A. The following routing principles were utilized in the Routing Study:[30]

- Maximize the distance of the transmission line from residences, businesses, public facilities, parks, cemeteries, communication towers, and wind turbines;
- Minimize crossing through cultivated land and center pivot irrigation arms;
- Maximize the distance of the transmission line parallel to existing utilities, roads, railroads, and/or parcel boundaries when practical;
- Minimize crossing wetlands, riparian areas, conservation lands, and protected species and their habitats for both the transmission line corridor and access for construction and maintenance; and
- Maintain a reasonable length with as few angles as possible.

Q. Was the development of alternate routes reasonable?

A. Yes, in my opinion the development of alternate routes was reasonable. The principals utilized to develop the route links and corresponding alternate routes were comprehensive.

[27] Grain Belt Express LLC *Kansas AC Collector System Routing Study*, p. 4-2, Section 4.2 (May 2024).
[28] *Id.*, p. 3-2, Section 3.2.
[29] *Id.*, p. 3-2 & p. 4-2, Section 3.2 & 4.2.
[30] Direct Testimony of Jamie Precht; p. 9, lines 14-26 (May 31, 2024).

A vast majority of route links and corresponding routes followed existing infrastructure corridors such as roadways, railroads, or existing electric transmission lines. Generally speaking, following existing infrastructure corridors is preferred, as opposed to creating new corridors in undeveloped areas.

Q. How were routes compared?

A. Alternate routes were scored based on a set of routing factors. The scoring methodology was a statistical z-score analysis. This methodology scores routes relative to one another and then ranks them. An impact score of zero is average, less than zero is a below average impact, and greater than zero is an above average impact. A lower score represents less impact and therefore higher preference.

Q. Were all routing factors considered equal?

A. No. Routing factors were weighted based on their perceived importance. Each factor's weight was based on the Routing Teams experience and feedback from the public and various government agencies.[31]

Q. Why is it important to weight routing factors?

A. Weighting routing factors allows the routing study to increase or decrease the relative importance of a given factor, thereby influencing route scores. For example, in this routing study, the proximity of homes to a proposed transmission route was weighted as having the highest negative impact. Therefore, residential proximity impacts had a larger influence on the score of a route in comparison to other factors.

Q. Please describe the routing criteria utilized in the analysis.

[31] Direct Testimony of Jamie Precht; p. 12, lines 22-24 (May 31, 2024).

A. The analysis used 18 routing criteria for the Meade Line and 17 routing criteria for the Bucklin Line. The factors were the same for both lines except the Meade Line considered "Length through 1.1 X the turbine height" which relates to the fall height of wind turbines. This parameter was not applicable to the Bucklin Line. Routing criteria tables can be found in the Routing Study tables 3-4 and 4-4. Routing criteria are summarized below.

Factor	Weight
Residential proximity score	10
Lesser prairie-chicken score	9
Length not along roads	9
Length not along parcel boundary	8
Transmission line crossings	7
Center pivot irrigation systems in ROW	7
Non irrigated cropland acres in ROW	4
Woodland acres in ROW National Land Cover Database (NLCD)	3
Wetland acres in ROW	3
Total length	3
Stream crossings (NHD)	2
Length through floodways/floodplains 100-year (FEMA)	2
Length not along existing transmission lines	2
Heavy angles > 30 degrees	2
Cultural sites within 1,320 feet	2
Road crossings	1
Length through 1.1 X the turbine height*	1
Length along existing distribution line	1

*Meade Line Only

Q. Do you think the analysis and comparison approach was reasonable?

A. Yes. The z-score analysis was a reasonable approach to compare impacts of the numerous different routes relative to one another and is commonly used for electric transmission line siting evaluations.

Q. What types of impacts did the routing factors appear to favor?

A. The weighted factors used in this Routing Study tended to favor social and agricultural impacts over factors that primarily impact cost. Generally, the factors appear to be weighted to result in a longer route that follows roadways and avoids houses in lieu of a shorter route that decreases cost.

Q. Do you believe a Commission decision on line siting principles and their prioritization should be decided prior to a line siting proceeding?

A. I believe it would be more efficient to obtain a Commission ruling on the principles and prioritization scheme to be used for future line siting studies as a precondition to performing the analysis. Providing the principles as part of line routing study as was done in this case (and every preceding line siting case in the last 10 years) is acceptable. At this point, any modification of the principles or prioritization scheme that is ordered by the Commission could result in the need to modify the instant study and propose an alternative route.

Q. Are you concerned about the potential bias of assigning prerequisite conditions to the route evaluation?

A. Not necessarily. Assuming the prerequisite conditions have high priority for consideration in the factors used to evaluate the routing principles, I believe it would be reasonable to select an initial set of routes based on these factors.

Q. Was the lowest scoring route selected?

A. No. The Meade Line was narrowed down to 51 least-impact routes and the Bucklin Line was narrowed down to 11 least-impact routes.[32] The least-impact routes were selected

[32] Grain Belt Express LLC *Kansas AC Collector System Routing Study*, p. 3-14 & p. 4-14, Section 3.5.3.1 & 4.5.3.1 (May 2024).

based on the lowest 10% of all routes compared. The least-impact routes were then compared individually to determine the preferred routes.

Q. How were the least-impact routes compared individually?

A. The final comparison of the least-impact routes was based on subjective decisions made by the routing team. The routing team compared routing factors and considered other items not included in the routing factors to select the preferred route.

Q. Who was on the routing team?

A. The routing team was comprised of six individuals from Invenergy, four individuals from Burns & McDonnel, and two individuals from HDR.[33]

Q. Do you agree with the methodology allowing for consideration of multiple least-impact routes?

A. Yes. Without considering multiple low impact routes, the evaluation may produce a result which has the lowest score but is not preferable due to considerations other than routing factors. Narrowing down to the least impact routes decreases the total number of routes to a number which allows for a case-by-case comparison. The difference between the lowest scoring route and a route with a score within 10% is relatively negligible, and in my opinion direct comparison will provide for better results.

Q. Please provide examples of conditions other than routing factors.

A. The following partial list describes considerations other than routing factors utilized to select least-impact routes:

- Impacts to structures (i.e. outbuildings) within or near the R.O.W. which were not included in routing factors.

[33] Response to Staff Data Request 13.

- Whether residences, center pivots, or wind turbines would prohibit potential modifications to the route in the future.
- The existence of private airstrips.
- The location of the route relative to residential property (i.e. directly in front of residence or in a less intrusive location).
- Routes with higher cost without creating any other benefit were removed.

Q. Did the Routing Study provide a reasonable method for comparing least-impact routes?

A. Yes. Least-impact routes were compared in Sections 3.5.3.2 and 4.5.3.2 of the Routing Study for the Bucklin and Meade routes respectively. The methodology to eliminate routes and ultimately select a proposed route was reasonable.

REVIEW OF THE PROPOSED ROUTES

Q. What was the justification for the proposed Meade Line?

A. The overall justification for selection of the Meade Line is presented with Section 4.6 of the Routing Study and is summarized below:

- The route has fewer acres of center pivot irrigation relative to other routes and minimizes acres of non-irrigated cropland in the ROW.
- The route minimizes impacts to land use because it parallels roads.
- The route has among the fewest number of heavy angles.
- The route has among the fewest number of recorded cultural sites within 1,320 feet.
- While the route had a higher than average residential proximity score, it has no homes within 150 feet of the route centerline and further reduces residential impacts by not crossing any driveways. Additionally, no parcels were crossed where residential structures on that parcel were identified within 500 feet of the proposed route.
- It minimizes impacts to lesser prairie-chicken habitat by avoiding known historic or active lek (communal area in which two or more males of a species perform courtship displays) locations and higher quality Crucial Habitat Assessment Tool (CHAT) areas.

- It minimizes impacts to private airports identified from public feedback.
- It minimizes impacts to wetlands and potential whooping crane stopover locations with only 7.04 acres of National Wetland Inventory (NWI) wetlands located in the ROW.

Q. Can you describe the proposed Meade Line?

A. The total length of the Meade Line is approximately 46 miles. The Meade Line begins near the intersection of F Road and 12 Road in Meade County, Kansas. The Meade Line parallels County Road F, County Road 13, County Road C, KS-23, County Road CC, and Ford Ensign Road. Approximately 40.7 miles of the Meade Line parallels existing roads. The Meade Line also parallels an existing 115 kV transmission line. The portion of the Meade Line following the existing transmission line is approximately 5.3 miles.

Q. Did the portion of the line following existing transmission lines follow parcel boundaries?

A. No. The portion of the line following existing transmission lines is routed diagonally through properties and does not follow parcel boundaries.

Q. What was the justification for the proposed Bucklin Line?

A. The overall justification for selection of the Bucklin Line is presented with Section 3.6 of the Routing Study and is summarized below:

- The route minimizes acres of center pivot irrigation and has among the fewest acres of non-irrigated cropland in the ROW.
- The route is one of the shortest routes.
- The route minimizes impacts to land use because it parallels roads and parcel boundary lines.
- The route has among the fewest number of heavy angles.
- The route has the fewest number of recorded cultural sites within 1,320 feet.

- While the route was not the lowest scoring for residential proximity, it has no homes within 150 feet of the route centerline and further reduces residential impacts by not crossing any driveways or parcels where residential structures on the affected parcel were identified within 500 feet of the proposed route.

- The route minimizes impacts to lesser prairie-chicken habitat by avoiding known historic or active lek locations and higher quality CHAT areas and scored among the lowest in this category.

- The route minimizes impacts to wetlands and potential whooping crane stopover locations with only 2.24 acres of NWI wetlands located in the ROW.

- The route has among the fewest acres of woodland clearing with 1.95 acres of woodlands in the ROW.

Q. Can you describe the proposed Bucklin Line?

A. The total length of the Bucklin Line is approximately 16 miles. The Bucklin Line begins near the intersection of Whirlwind Road and 131 Road in Ford County, Kansas. The Bucklin Line parallels Whirlwind Road, KS-34, County Road 125, Saddle Road, and Ford Ensign Road. Approximately 13.8 miles of the line parallels existing roads. The Bucklin Line also parallels an existing abandoned railroad for 0.8 miles and bisects a section for 1.4 miles along the parcel line.

Q. What were the residential proximity scores for the proposed routes?

A. The residential proximity scores for the proposed routes were -4.98 and -3.83 for the Meade and the Bucklin Line respectively.

Q. For the selected routes, did the residential proximity factor have a low impact weighted z-score?

A. For the selected routes that were subjectively reviewed, the weighted z-scores for residential proximity were near average in comparison to other least-impact routes. While residential proximity had the highest weight, routing criteria to avoid impacts to center

pivots and follow roads were also weighted high. Proximity to roads and avoiding impacts to center pivots have a tendency to conflict with residential proximity scores.

Q. Should residential proximity be an overarching factor controlling the route evaluation?

A. No. While residential proximity is often the most important consideration to property owners, other items are also of high importance. Evaluating residential proximity against other impacts (social, agricultural, environmental, etc.) provides a balanced evaluation.

Q. Will there be any permanent impacts to center pivot irrigation systems?

A. According to GBE the routing team made an effort to avoid routing in a manner that would permanently impact the operation of the pivot irrigators along the path of the AC Collector Lines. GBE also indicated in areas where the AC Collector Lines cross existing pivot irrigators, the distances the Lines crosses the irrigated area is less than the typical span length (1,100 – 1,200 feet) allowing the pivot to be spanned by the transmission line without impacting their operation. Should unforeseen permanent impacts to center pivot systems occur, GBE has stated it will work with landowners to reach a resolution. According to GBE, options would include compensating for modifications to the pivot irrigation system to navigate around AC Collector Line poles/structures or determining other methods of compensation to make landowners whole for any permanent impacts to the pivots.[34]

Q. Has Staff received any feedback from landowners regarding the impact on center pivo irrigation?

[34] Response to Staff Data Request 10.

A. We have reviewed the comments landowners have submitted to GBE, and we anticipate additional comments will be received during the upcoming public hearing. Staff will address property owner comments in our testimony to be filed on August 7, 2024.

Q. Was selection methodology for the proposed routes reasonable?

A. Yes. In my opinion, the Applicant's methodology in selecting the proposed routes from other least-impact routes was reasonable. The Routing Study appears to have relied upon an appropriate methodology that considered a variety of factors to determine a reasonable route.

OTHER ROUTE CONSIDERATIONS AND PUBLIC COMMENT

Q. Is Commission determination regarding the reasonableness of the selected route the only determinant of whether the Proposed Route can be built?

A. No. The Commission's determination in this Docket is definitive only from the standpoint of jurisdictional matters such as location of the Proposed Route that is just and reasonable and protects the rights of all interested parties and the general public. The Commission also has responsibility to enforce construction standards for the line. If the Proposed Route is approved by the Commission, the Applicant must also obtain additional permits, endorsements, or may have additional studies to complete for other agencies.

Q. Is their evidence that the Applicant contacted federal, state, and local agencies to acquire data?

A. Yes. Requests for information were provided to the following agencies:[35]

- Environmental Protection Agency.
- National Park Service.

[35] Direct Testimony of Jamie Precht; p. 13, lines 9-15 (May 31, 2024).

- U.S. Fish and Wildlife Service.
- U.S. Army Corps of Engineers.
- Kansas Department of Wildlife and Parks.
- Kansas Department of Agriculture.
- Kansas Department of Health and Environment.
- Kansas Historical Society.
- Natural Resource Conservation Service.
- Federal Aviation Administration.
- Kansas Biological Survey.
- Kansas Department of Transportation.

Q. Have the above agencies provided their approval of the proposed route?

A. It is our understanding the requirements of some of the above agencies may not be applicable to this route. For the other agencies, our general understanding is the agencies have not issued a final opinion on the route.

Q. What would happen if the above agencies required the route to be modified?

A. Depending on the extent of the modification, Staff believes a change to a Commission-approved route would require GBE to re-apply to the Commission for approval of the route modification.

Q. Are there any de minimis changes that could be performed without Commission approval?

A. Yes. Generally, the Commission has allowed a utility to "microsite" or make minor modifications to a route. Staff believes micrositing should be limited to route modifications within 660 feet of the approved routing centerline.

Q. Are there other considerations that Staff uses when determining the reasonableness of the proposed route?

A. Yes. In Staff's opinion, reasonable public feedback should be considered and given appropriate weight. Additionally, Staff recognizes that comments that arise at the public hearings, as well as other public input submitted in written form through the Kansas Corporation Commission's Office of Public Affairs and Consumer Protection, are considered by the Commission.

Q. What is Staff's opinion regarding the importance of public input?

A. It is important for the public, and specifically landowners that are affected by the route, to be able to provide input in the decision-making process. This input aids Applicants in understanding how the land is used. While Routing Studies analyze routes, properties, and issues, landowner's input is critical to understanding problems that may not be obvious. So, hosting public open houses early in the process is essential to the process of determining the preferred route.

Q. Do Kansas statutes require utilities to host public open house meetings prior to filing a Line Siting Application?

A. No. Informational meetings (public open houses) or solicitation of public comment prior to filing an Application for transmission siting with the Commission are not required by Kansas statute. However, Staffs experience suggests that communication and solicitation of public comment is desirable prior to the filing of an Application for transmission line siting of a specific route. Public comment generally includes input from any interested parties, including non-governmental organizations. In this case, the statutory requirement

for a Commission public hearing will be met with public hearings scheduled by the Commission for July 10, 2024, in Dodge City, Kansas.

Q. Did the applicant complete public engagement prior to the Application being submitted?

A. Yes. The Applicant engaged in a series of in-person public open houses, a virtual public open house, and direct landowner communication.[36] Additionally GBE contacted the County Commissioners in Gray, Meade, and Ford Counties.[37] The Applicant made an effort to complete public outreach beyond statutory requirements.

Q. Was there evidence suggesting the proposed routes were influenced by comments at public meetings?

A. Yes. The Routing Study cited several instances where public comments were received, and the route was modified to accommodate the comments. Additionally, GBE made two adjustments to routes based on information gathered at open houses.[38]

CONSUMER COMMENTS

Q. Do you have any responses to consumer comments received thus far relating to the GBE line siting Application?

A. Staff reserves responses to consumer comments for a later filing due on August 7, 2024. That will be after the Public Comment period ends on July 15, 2024, transcripts from the public hearings will be available, and all written comments have been received by the Commission.

[36] Direct Testimony of Emily Hyland; p. 4, lines 15-17 (May 31, 2024).
[37] *Id.*, p. 6, lines 5-6.
[38] Response to Staff Data Request 5.

CONCLUSIONS AND RECOMMENDATIONS

Q. Please summarize your testimony.

A. Staff believes this transmission project is necessary and the route is reasonable and therefore recommends the Commission conditionally approve the Application. The following items are provided in support of Staff's conclusion:

1. The 11-624 Order considered the necessity of the GBE Project as a whole including the AC Collector System for the HVDC transmission lines and concluded the GBE Project is necessary.
2. The GBE Project provides indirect benefits to Kansas consumers demonstrating necessity.
3. The GBE Project provides potential economic benefits to Kansas demonstrating necessity.
4. The GBE Project provides potential benefits to consumers outside of Kansas demonstrating necessity.
5. The proposed AC Collector Lines are necessary to the GBE Project as a whole demonstrating necessity of the specific transmission lines.
6. A Routing Study was completed to analyze and compare potential routes.
7. Areas studied in the Routing Study were reasonably sized to allow for a comprehensive evaluation.
8. The Routing Study developed numerous alternative routes and compared the alternative routes utilizing objective parameters.

9. The routing factors were generally weighted to favor social issues and to follow existing infrastructure corridors in lieu of focusing on minimizing transmission line costs.

10. GBE made attempts to interact with the public and incorporate comments while completing the Route Study.

11. Proposed routes were selected utilizing an appropriate methodology with available data.

Q. Are there any outstanding items of concern?

A. Yes. An AC Collector System is necessary for the GBE Project as a whole. However, the entire AC Collector System should be planned and constructed in an orderly manner to mitigate local property owner impacts.

The GBE Project will be interconnected to the local electric system. Power quality due to the interconnection may be impacted.

The start points of the two AC Collector Lines is based on speculative interconnect agreements. Construction of the AC Collector Lines should only be permitted following execution of generator interconnection agreements.

Q. Please summarize your recommendations for the Commission.

A. In accordance with the findings presented above, Staff recommends the Commission condition approval of the Line Siting Application on the following:

1. GBE shall develop an AC Collector System master plan showing the anticipated location, quantity, and length of AC Collector Lines. GBE should demonstrate compliance with K.S.A. 66-1,171 within the AC Collector System master plan.

2. GBE shall limit future AC Collector Line construction to the geographic area identified in the AC Collector Line master plan approved by the Commission.
3. GBE shall construct the two proposed lines to allow a double circuit unless they can demonstrate double circuiting to be inefficient.
4. GBE shall complete a power quality study to evaluate the potential for decreased power quality in Kansas service areas near the converter station that may occur as a result of the GBE Project and propose measures to mitigate decreases in power quality.
5. GBE shall provide any equipment to mitigate power quality impacts if the power quality study determines such equipment is necessary.
6. GBE shall acquire interconnect agreements with generators in the vicinity of AC Collector Line Origination points prior to constructing AC Collector Lines.
7. If interconnection agreements are not formed and the AC Collector Lines are not constructed, GBE shall relinquish easements back to property owners.

Q. Does this conclude your testimony?

A. Yes.

STATE OF KANSAS)
) ss.
COUNTY OF SHAWNEE)

VERIFICATION

Paul Owings, being duly sworn upon his oath deposes and states that he is Deputy Chief Engineer of the Kansas Corporation Commission of the State of Kansas, that he has read and is familiar with the foregoing *Direct Testimony*, and attests that the statements contained therein are true and correct to the best of his knowledge, information and belief.

Paul C Owings

Paul Owings, P.E.
Deputy Chief Engineer
State Corporation Commission of the
State of Kansas

Subscribed and sworn to before me this 2 day of July, 2024.

Notary Public

My Appointment Expires: 4/28/25

NOTARY PUBLIC - State of Kansas
ANN M. MURPHY
My Appt. Expires 4/28/25

CERTIFICATE OF SERVICE

24-GBEE-790-STG

I, the undersigned, certify that a true and correct copy of the above and foregoing Testimony was served via electronic service this 3rd day of July, 2024, to the following:

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