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.	)))))	Docket No. 24-GBEE-____-STG

DIRECT TESTIMONY OF

DAVID GELDER

ON BEHALF OF

GRAIN BELT EXPRESS LLC

May 31, 2024

Contents

I. INTRODUCTION

Q. Please state your name, business address, and present position.

A. My name is David Gelder. I am a Senior Engineering Manager at Invenergy LLC ("Invenergy"). My business address is One South Wacker Drive, Suite 1800, Chicago, IL 60606.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Grain Belt Express LLC ("Grain Belt Express").

Q. Please describe your educational background and employment experience.

A. A copy of my curriculum vitae is attached as Exhibit DG-1.

Q. Do you have experience in engineering, construction and project management of high voltage electric transmission lines?

A. Yes. I have nearly 12 years of collective experience in or directly related to the engineering, construction and project management of high voltage electric transmission lines. As a company Invenergy has developed in aggregate hundreds of miles of high voltage transmission lines. I've worked on many of these projects, including: the Samson 345 kV transmission line in Texas, the Traverse 345 kV transmission line in Oklahoma, the Maverick 138 kV transmission line in Oklahoma, and many others. Currently Invenergy has dozens of AC transmission projects in various stages of development and construction in more than 20 states.

Q. What are your duties and responsibilities in your present position?

A. I am the Engineering Manager for the two alternating-current ("AC") 345 kV transmission lines that feed into the Grain Belt Express Project. In this role, my responsibilities include managing development support, early construction activities, and engineering services for the AC Collector Lines.

Q. What is the purpose of your testimony?

A. I am testifying on behalf of Grain Belt Express, which has filed an application requesting that the State Corporation Commission of the State of Kansas ("Commission") issue a siting permit establishing routes for two inter-related transmission lines and associated facilities: (1) a double-circuit[1] 345 kV transmission line of approximately 46 miles in length across portions of Gray, Meade, and Ford Counties (the "Meade-Dodge City Line"); and (2) a single or double-circuit 345 kV transmission line of approximately 16 miles in length traversing a portion of Ford County (the "Bucklin-Dodge City Line"). Together, Grain Belt Express may refer to these lines as the "AC Collector Lines," which make up a portion of the AC Collector System.

A. Specifically, the purpose of my testimony is to:

- Describe Grain Belt Express' technical resources, experience, and approach to safety;
- Describe the transmission line design for the AC Collector Lines;
- Provide a high-level overview of the AC Collector Lines and the Proposed Routes; and,
- Describe the construction process and construction schedule.

Q. Are you sponsoring any exhibits as part of your direct testimony?

A. Yes, I am sponsoring the following exhibit:

- Exhibit DG-1 – David Gelder's Curriculum Vitae

[1] The Meade-Dodge City Line is currently planned as a double circuit transmission line, but further refinements to Grain Belt Express' design and engineering may occur. Grain Belt Express will update the Commission throughout this proceeding regarding significant design and engineering modifications.

II. GRAIN BELT EXPRESS' TECHNICAL RESOURCES, EXPERIENCE AND APPROACH TO SAFETY

Q. Please describe the business of Grain Belt Express.

A. As set forth in the testimony of Kevin Chandler, Grain Belt Express is a limited liability company organized under the laws of the State of Indiana. Grain Belt is a wholly owned subsidiary of Invenergy Transmission LLC ("Invenergy Transmission"), a Delaware limited liability company, which is a wholly owned subsidiary of Invenergy Renewables LLC ("Invenergy Renewables"), also a Delaware limited liability company. Invenergy Transmission and its affiliate company, Invenergy LLC, are global leaders in renewable energy and transmission development. Invenergy or its affiliates are providing engineering, procurement and construction support and management for Grain Belt Express pursuant to agreements with Grain Belt Express.

Invenergy Transmission's mission is to construct and operate high voltage transmission lines and associated facilities for the purpose of connecting renewable resources in the U.S. and delivering their output to load and population centers that have an increasing demand for electricity produced from renewable resources.

Q. Please describe Invenergy Transmission's and Invenergy Renewable's recent transmission projects.

A. Invenergy Transmission through its wholly owned direct and indirect subsidiaries is developing two significant high-voltage transmission line projects in different regions of the United States. It is also associated with the development of a third significant high-voltage transmission line in the United States through its parent company, Invenergy Renewables.

Invenergy Renewables has developed and constructed over 4,000 miles of transmission and collection lines located throughout the United States and internationally, covering nearly all ice and wind structural loading regions, through various air contaminants and lightning isokeraunic

levels, tying into weak and strong power grids while meeting interconnection requirements, traversing geographical regions such as the Nevada desert, the mountainous terrain of Idaho, the wetlands of Texas, the farmland of Illinois, the swamps of Georgia, and more. All this work has been performed utilizing various local and regional contractors. The company's success comes from a culture which strives for technical expertise, versatility and accountability. This culture is dominant throughout the company and is maintained throughout the corporate structure.

For example, Invenergy Renewables and its affiliate companies recently developed and constructed, and is currently operating, a 27-mile transmission line in eastern Texas. The transmission line includes seven miles of single-circuit 345 kV and 20 miles of double-circuit 345 kV designed to deliver 1,600 MW of solar generation. Large areas of the planned transmission corridor were surveyed and classified as wetlands during early-stage development. A strategy was developed and discussed with the United States Army Corp of Engineers ("USACE") to perform the construction under what was Nationwide Permit 12, Utility Line Activities (prior to 2021 renewal, now Nationwide Permit 57, Electric Utility Line and Telecommunications Activities). Permit requirements included limiting the loss of waters of the United States or permanent disturbance to wetlands. Components of the strategy developed in coordination with the USACE included using non-mechanized methods to clear vegetation from the right-of-way, incorporating a foundation design which did not require the removal of any soil and designing and planning for structure erection to be performed by helicopter to avoid heavy crane access within delineated wetlands located along the transmission corridor

Q. Please describe Grain Belt Express' approach to safety.

A. Worker safety and the safety of the public is our number one priority through design, construction, and operations. Evaluating health and safety reports or Occupational Safety

and Health Administration ("OSHA") Work-Related Injuries and Illnesses is critical when selecting the general and sub-contractors for each project to promote the success of any project. If a situation which risks the safety of the public or those working on the project is observed, it is Grain Belt Express' and its affiliates' practice to stop work and perform a full inspection of operations and equipment. This practice is called "stop work authority" and extends to anyone present on the job site, irrespective of role.

Q. Does Grain Belt Express have specific experience constructing electric transmission lines and other linear infrastructure projects across agricultural lands, wooded lands and other rural properties?

A. Yes. The management team for Grain Belt Express has significant experience in each of these environments. As an example, the management team for Grain Belt Express developed the Traverse Wind Project, which crossed more than 85 miles of rural properties, including agricultural properties on which crops such as soybeans, corn, hay, and alfalfa were being grown. The development and construction site team worked diligently with landowners to minimize impacts to individual properties by keeping structures out of areas which would negatively impact agricultural operations, such as avoiding pivot circles and coordinating specific access to the right-of-way and individual structures. The Traverse Wind Project also crossed rivers and other sensitive or protected environments. The management team for Grain Belt Express was responsible for mapping access routes, conducting extensive surveys of endangered species (both plant and animal), designating wetlands and other sensitive areas and training over 400 workers on environmental compliance.

Grain Belt Express' environmental regulatory specialists also have experience managing environmental construction concerns and will do the same for the AC Collector Lines being sited in this proceeding.

III. TRANSMISSION LINE DESIGN

Q. What type of transmission conductor does Grain Belt Express plan to use for the AC Collector Lines?

A. Conductor studies have not yet been finalized and the exact conductor is therefore subject to change during detailed design. Conductor selection is based on a combination of typical practice, economics, and project-specific needs (e.g., line losses, special requirements, future planning, etc.) For reference, a commonly used conductor on Invenergy 345 kV lines is double-bundled 954 ACSR "Cardinal." However, for capacity purposes this project may need a larger ACSR conductor.

Q. What type of transmission structures does Grain Belt Express propose to use for the AC Collector Lines?

A. Grain Belt Express plans to use single- or double-circuit tubular steel poles for the majority of the AC Collector Lines, per Invenergy's typical design practice for 345 kV transmission lines. Project-specific needs may warrant the need for alternative structure types (e.g., multi-pole structures for crossing above/below existing transmission lines, lattice poles or towers for longer than average spans.). The insulator configuration will likely be a V-string, which facilitates larger conductors and consequently additional transmission capacity.

Q. Why did Grain Belt Express select these transmission structures for the AC Collector Lines?

A. Tubular steel poles have a relatively smaller total footprint (compared to guyed structures), which is less disruptive to agriculture. Additionally, the V-string insulator

configuration facilitates additional transmission capacity. The V-string insulator configuration is designed to support larger conductors and minimize conductor movement.

Q. Will Grain Belt Express design its facilities to meet necessary reliability and safety requirements or concerns?

A. Yes. Grain Belt Express will design the AC Collector Lines according to applicable Commission requirements, minimum code requirements (e.g., National Electric Safety Code ("NESC"), and good utility practice. Some of the guidelines and standards that are typically referenced during design include publications by: Institute of Electrical and Electronics Engineers ("IEEE"), American Society of Engineers ("ASCE"), American National Standards Institute ("ANSI"), and the North American Electric Reliability Corporation ("NERC"). Public safety and worker safety are critical considerations in the design, construction, and operation of transmission facilities, and safety and security have been and will continue to be a major focus in the preparation of specifications and designs. Grain Belt Express will require that construction of the lines include initial clearing and continuous vegetation management to maintain clearances and access points in accordance with the NESC, the Commission's Wire-Stringing Rules contained in K.A.R. 82-2-1 *et seq*. and NERC requirements.

Q. Does the design of Grain Belt Express' facilities conform to generally accepted practices for a project of this type?

A. Yes. Grain Belt Express will utilize experienced design, procurement, and construction personnel to prepare the design(s) specifications, drawings, and plans for the AC Collector Lines. A competent Professional Engineer(s), licensed by the Kansas State Board of Technical Professions, will be responsible for the design(s) and will seal and sign construction drawings. Also, Grain Belt Express' construction management team, safety personnel, engineering

consultants, and the respective contractors assigned to the AC Collector Lines will complete field verification and validations to witness that the facilities are constructed to the approved design so that the transmission facilities can be operated reliably and safely.

Q. Will the AC Collector Lines comply with the requirements of K.S.A. 66-183 regarding stringing and maintenance of wires?

A. Yes. Grain Belt Express will comply with the requirements of K.S.A. 66-183 to string and maintain wires to avoid unreasonable injury or interference from or with the wires of other utilities and the requirement that the height of any wires which cross above the tracks of a railway company shall not be less than twenty-five feet from the top of the rails. Grain Belt Express expects to submit a wire-stringing application pursuant to K.A.R. 82-12-1 *et seq.* for the Commission's review and approval after design of the facilities are complete.

Q. What other approvals are required for the AC Collector Lines?

A. Grain Belt Express will undertake coordination with, and as necessary, obtain approvals and permits from the following agencies and governmental entities: the U.S. Army Corps of Engineers ("USACE"); the U.S. Fish and Wildlife Service ("FWS"); the Kansas State Historic Preservation Office ("SHPO"); the Kansas Department of Wildlife and Parks ("KDWP"); the Kansas Department of Agriculture – Division of Water Resources ("DWR"); the Kansas Department of Health and Environment ("KDHE"); the Kansas Department of Transportation ("KDOT"); and the various counties in which the AC Collector Lines will be located.

IV. AC COLLECTOR LINES' LOCATIONS, INTERCONNECTIONS, AND PROPOSED ROUTES

Q. Where will the AC Collector Lines be located?

A. The Meade-Dodge City Line is located along a 46-mile corridor across portions of Gray, Meade, and Ford Counties. The Bucklin-Dodge City-Bucklin Line traverses 16 miles in Ford

County. The Proposed Routes are described in detail in the Routing Study provided as Exhibit JP-2 to Ms. Precht's testimony, detailed maps of the Proposed Routes are provided in Exhibits JP-3 and JP-4, and a legal description of the Proposed Routes is provided as Exhibit JP-5.

Q. How did Grain Belt Express select the Proposed Routes for the AC Collector Lines?

A. Grain Belt Express assembled a cross-functional team of internal and external subject-matter experts ("SME") to develop the Proposed Routes, including development, legal/regulatory, land services, environmental, engineering, construction, and operations team members. As part of this team, Grain Belt Express retained Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell"), an experienced transmission line design and permitting firm with transmission project experience in Kansas and Missouri, to assist with the engineering, environmental, and routing aspects of the AC Collector Lines. Burns & McDonnell prepared a preliminary routing analysis, through which Grain Belt Express identified preliminary proposed routes for the AC Collector Lines. Grain Belt Express has continued to refine the preliminary proposed routes, including through its outreach to and coordination with landowners and county officials. Ms. Precht describes the routing process in more detail in her Direct Testimony.

Q. How will the AC Collector Lines be interconnected to the transmission grid?

A. The AC Collector Lines are expected to have switchyards and/or metering equipment within the corridors of the lines. A switchyard in Ford County adjacent to the Grain Belt Express' converter station will facilitate interconnection to the grid via Grain Belt Express and/or other future interconnections.

V. CONSTRUCTION PROCESS AND CONSTRUCTION SCHEDULE

Q. How much ROW is needed for the AC Collector Lines?

A. Grain Belt Express will seek to obtain easements that are typically 150 feet wide, as is Invenergy's standard practice for 345 kV lines. This width will be verified for minimum clearances in each span, based upon the final design, including structure configurations, span lengths, terrain, vegetation, and other constraints. This proposed ROW width may vary at some locations to accommodate topographic features and crossing requirements and to provide flexibility in final structure placement. The width of the ROW will be sufficient to provide for the safe and reliable operation of the AC Collector Lines.

A. Grain Belt Express also anticipates acquiring land rights associated with construction, stringing, and ongoing access, as well as material and equipment laydown yards. This additional ROW may be required where Grain Belt Express cannot access the ROW directly from the road, for example, due to water bodies or wetlands or other environmentally significant terrain features. Laydown areas will generally require approximately 25-50 acres and will be spaced approximately 15-25 miles apart to allow the contractor to efficiently store and source the materials and equipment to complete construction. These laydown yards are typically graded, rocked, and fenced, but only used temporarily. Upon construction completion, the landowner's property will be restored to its original use or left as is otherwise agreed to with the landowner.

Q. When will full-scale construction on the AC Collector Lines begin?

A. Early construction activities, including civil site work (e.g., access roads, and vegetation clearing) are anticipated to start as early as Q2 2026. Detailed structural design and procurement activities are anticipated to begin in late 2024. Other material sourcing activities for the conductor, line hardware, and insulator assemblies are also anticipated to commence in late

2024 or early 2025. Limited geotechnical investigations will begin in 2024, with additional investigations anticipated to further inform design and construction of structure foundations.

Q. What is the current in-service date for the AC Collector Lines?

A. The current in-service date is anticipated to be in 2028.

Q. Does Grain Belt Express compensate landowners for crop damage, crop loss, field repair, damage to drainage tiles, temporary or permanent impacts to center pivot irrigators or other similar impacts, should they occur?

A. Yes. As discussed in the Direct Testimony of Brad Fine, Grain Belt Express will make payments and/or hire contractors to repair, remediate, and make landowners whole for any such impacts.

Q. How does Grain Belt Express plan to treat trees that must be removed from the ROW?

A. In preparing the ROW for construction, precautions are taken to protect the environment and limit disturbance, scarring, or defacing of the natural surroundings. Minimum clearing takes into consideration safety required for construction, operation, and maintenance activities of the transmission line. Cleared timber is felled and limbed. Care is taken to prevent removal of ground cover and erosion of the soil. If required, stumps are removed or treated with an acceptable herbicide. Danger trees outside the ROW (meaning trees that are sufficiently tall that if felled could make contact with the line) are also removed.

Q. Will construction remove any agricultural land from cultivation?

A. The micro-siting of structures and access routes will minimize permanent impacts to landowners, land resources, and the environment. During construction temporary impacts to land may include use and/or disturbance of up to the entire 150-foot ROW. However, permanent

impacts to land will typically be limited to the actual structure footprint, required access, and vegetation clearing. Typical structural footprints may vary from approximately 6-12 feet, depending on structure loading (e.g., “in-line” versus “90 degree”). Permanent access roads (if required) may be up to 16-feet wide.

VI. CONCLUSION

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

I, David Gelder, do solemnly, sincerely and truly declare and affirm that I am a Senior Engineering Manager for Invenergy Transmission, LLC, that I have read the foregoing testimony and know the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge and belief, and this I do under the pains and penalties of perjury.

By: */s/ David Gelder*
David Gelder

May 31, 2024

Exhibit DG-1

DAVID GELDER

SENIOR MANAGER, ENGINEERING | PE, PMP, MBA

CONTACT

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EDUCATION

M. B. A.
University of Utah, Salt Lake City, UT, 2019

M. S. | STRUCTURAL ENGINEERING
Thesis and Study Abroad in China
Brigham Young University, Provo, UT, 2012

B. S. | CIVIL ENGINEERING
Brigham Young University, Provo, UT, 2011

SKILLS

- Leadership
- Engineering
- EPC Contracts
- Strategy
- Project Accounting
- Spanish
- Power / Renewables

PROFILE

David Gelder is a dynamic and innovative leader with nearly 12 years of progressive engineering, project management, and leadership experience. Mr. Gelder's background includes proficiency in engineering, contracts, risk, proposals, and strategy. He has written 6 publications, managed dozens of projects, and led complex/multi-year EPC contracts. Clients include Invenergy, Doral, Ignis Energia, GE Renewables, 174 Power Global, Highland Fairview, LS Power, PG&E, AEP, Mortenson, and SDG&E. He takes interest in FERC regulation and market trends.

EXPERIENCE

SENIOR MANAGER, TRANSMISSION Invenergy | UT | 2023 –Present
Directs a portfolio of 60+ greenfield "gentie" (transmission generation tie in) projects in approximately 23 states in various stages of development, engineering, and construction–totalling nearly 25 GW of generation (solar, wind, BESS). Mentors and co-manages a team of 7 junior engineers.

SENIOR PROJECT MANAGER & PRACTICE LEAD Stantec | UT | 2021 –2023
Directed a portfolio of approximately $30M. Managed a team of 10 engineers. Technical practice leader for 150 transmission and distribution engineers and designers in U.S. and Canada. Lead engineer on one of the largest solar projects in the U.S. at 1.2 GW. Project manager on a cross-border 500 kV gentie wind project requiring a presidential permit.

PROJECT MANAGER TRC | UT | 2018 – 2021
Managed a portfolio of approximately $20M, including multi-year EPC projects. Led more than a dozen projects through the entire project lifecycle. Handled risk and complexity while maintaining a high level of client satisfaction.

LEAD TRANSMISSION ENGINEER TRC | UT | 2013 – 2018
Led challenging projects with progressive leadership responsibilities. Presented a technical paper to more than 800 conference attendees. Directly managed project execution, including delegation and QA/QC of multiple engineers and designers.

ASSOCIATE ENGINEER MWH | UT | 2012 – 2013
Supported design projects. Led research & development of patent-pending technologies.

CERTIFICATIONS

- Project Management Professional, 2020 (2703790)
- Professional Engineer, Utah, 2015 (8841925-2202)
- Professional Engineer, California, 2014 (C83706)
- Cardiopulmonary Resuscitation (CPR) Training, 2018

PUBLICATIONS/AWARDS

- Gelder, D.C., Vorwaller, S. (2022) "Should interconnection participant funding be reformed or replaced?" POWERGRID International.
- Gelder, D.C. (2018). "Transmission Engineers, Sharpen Your Pencils!" Transmission & Distribution World (TDWorld),
- Gelder, D.C. (2017). "The Catenary Exposed – Understanding Theoretical Conductor Behavior in Transmission Lines." Proc., Transmission and Substation Design and Operation Symposium (TSDOS), University of Texas at Arlington, Arlington, TX.
- Gelder, D.C. (2015). "A 'Plug' for Power Line Structures." STRUCTURE Magazine, 82.
- Recipient 2016 ASCE/SEI Young Professional Scholarship