Exhibit No. 145
Issues: Project Overview; Operational Qualifications; Construction
Witness: Kris Zadlo
Type: Supplemental Direct Testimony
Sponsoring Party: Grain Belt Express Clean Line LLC
Case No. EA-2016-0358
Date Testimony Prepared: November 12, 2018

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EA-2016-0358

SUPPLEMENTAL DIRECT TESTIMONY OF KRIS ZADLO

SENIOR VICE PRESIDENT, INVENERGY LLC

ON BEHALF OF GRAIN BELT EXPRESS CLEAN LINE LLC

November 12, 2018

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I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is Kris Zadlo and I am the Senior Vice President, Commercial Analytics, Regulatory Affairs and Transmission for Invenergy LLC (together with its affiliate, Invenergy Transmission LLC, "Invenergy"). My business address is 1 South Wacker, Suite 1900, Chicago, IL 60606.

Q. Please discuss your educational background and work experience.

A. I received a Master of Science in Electrical Engineering from Purdue University in 1990 and a Bachelor of Science from Rose-Hulman Institute of Technology in 1989. I am a licensed professional engineer in the State of Illinois (license number 062-049149). I am employed by Invenergy and am responsible for managing services provided to all Invenergy projects with respect to their commercial activities pertaining to transmission assets. These responsibilities include managing technical and regulatory issues, as well as supporting filings before the Federal Energy Regulatory Commission ("FERC" or "Commission"). Previously, I was employed with Calpine Corporation ("Calpine") as Vice President of Transmission. I worked for Calpine for 8 years. Prior to Calpine I worked for Commonwealth Edison Company of Chicago ("Commonwealth Edison" or "ComEd") as Technical Studies Director. I worked for 10 years at Commonwealth Edison, holding various positions in transmission planning, generation planning, operations, and strategic analysis. My C.V. is attached hereto as Schedule KZ-1.

Q. Please describe your utility experience.

A. I started my career at Commonwealth Edison in Chicago where I worked for 10 years in various positions in Transmission Planning and Strategic Analysis. As Technical Studies Director, I was responsible for transmission engineers that performed stability and

voltage studies and maintained the equipment rating data base for the entire transmission system. I personally wrote Commonwealth Edison's "Guidelines for Interconnection of Generation" and "Guidelines for Dynamic Scheduling." I also wrote ComEd's first "Interconnection for Photovoltaic Power System."

Over my career I have overseen the interconnection of over 6,000 megawatts ("MWs") of utility scale generation of various technologies. In 2001-2002, I was part of a small group of industry experts that crafted FERC's Large Generator Interconnection Procedures which were issued in 2003.

Q. Please describe your experience in implementing new technologies.

A. I founded Invenergy's energy storage business in 2012. In 2015 Invenergy's Grand Ridge Energy Center received two prestigious industry awards, Power Engineering's Renewable Energy Project of the Year and Energy Storage North America Innovation Award. Since 2012 our storage program has grown to seven facilities totaling 160 MW/390 MWh of built or contracted projects.

Earlier in my career, I worked with General Electric to develop a Trailer Mounted Combustion Turbine (TM2500) to help meet a critical energy need in the City of Chicago in 2000. The project was developed in 10 months, was the first deployment of its kind, and was the beginning of a new product line for GE. In both cases I was able to create or implement new utility scale technologies for safe and useful deployment.

Q. Have you previously testified before the regulatory commission of any state or the Federal Energy Regulatory Commission?

A. Yes. I have previously testified before the Wisconsin Public Service Commission and the FERC, most recently at the April 3-4, 2018 technical conference concerning the

coordination of affected systems in the generator interconnection process. A complete list of proceedings in which I have testified is attached hereto as Schedule KZ-2.

Q. What is the purpose of your testimony in this proceeding?

A. I will provide an introduction to Invenergy, including its history, organization, business model, and electric asset ownership and operating philosophy. I will describe Invenergy's pending acquisition of Grain Belt Express Clean Line LLC ("GBE") through its subsidiary Invenergy Transmission LLC ("Invenergy Transmission"). GBE is currently owned by Grain Belt Express Holding LLC ("GBE Holding"), which is a wholly-owned subsidiary of Clean Line Energy Partners LLC ("Clean Line"). GBE is developing the Grain Belt Express Clean Line Project ("GBE Project" or "Project"), an approximately 780-mile, overhead, multi-terminal ±600 kilovolt ("kV") high voltage direct current ("HVDC") transmission line and associated facilities that will connect over 4,000 MW of low-cost, wind-generated power in western Kansas. I will discuss the operational and managerial qualifications of Invenergy to acquire, own, and operate the Project. I will also provide support regarding the need for and financial viability of the Project and discuss how the public interest will be promoted by the grant of a certificate of convenience and necessity ("CCN") by this Commission to build the Project.

Q. Please describe Invenergy's pending acquisition of GBE.

A. On November 9, 2018 Invenergy Transmission LLC entered into a Membership Interest Purchase Agreement (the "Purchase Agreement") with GBE Holding to acquire GBE, which is the owner of all of the assets comprising the GBE Project. The Purchase Agreement is attached as Schedule KZ-3, and contains a requirement that the change in ownership in GBE from GBE Holding to Invenergy Transmission be approved by both

the Kansas Corporation Commission and the Missouri Public Service Commission ("MPSC" or "Commission") as conditions precedent to closing the acquisition. The related Development Management Agreement that provides development funding through the projected closing date of the MIPA is attached as Schedule KZ-4. Confidential redacted versions of Schedules KZ-3 and KZ-4 are attached to my testimony.[1]

Q. Do GBE and Invenergy plan to file a separate application for approval by this Commission of the change in ownership of GBE?

A. Yes. GBE and Invenergy plan to file an application for approval of the change in ownership.

Q. What is your understanding of the history of this proceeding before the MPSC?

A. Although I am not an attorney, it is my understanding that on August 30, 2016, GBE filed an application for a CCN authorizing it to construct, own, operate, control, manage, and maintain electric transmission facilities within Buchanan, Clinton, Caldwell, Carroll, Chariton, Randolph, Monroe, and Ralls Counties, Missouri, as well as an associated converter station in Ralls County. On August 16, 2017, the MPSC denied the application on the grounds that GBE failed to meet its burden of proof that it has obtained all county assents to the Project required by Section 229.100, Mo. Rev. Stat., as required by *In re Ameren Trans. Co. of Ill* ("*ATXI*").[2] Several parties appealed the Commission's denial of the application, and on July 17, 2018, the Missouri Supreme Court issued a

[1] GBE intends to seek a protective order under Commission Rule 4 CSR 240-2.135(3) to safeguard certain provisions in these agreements that contain highly sensitive and market competitive information, disclosure of which would cause serious harm to Invenergy, and to confirm the basis on which non-redacted versions would be produced.

[2] 523 S.W.3d 21 (Mo. App. W.D. 2017) (hereafter, "*ATXI*").

unanimous opinion[3] that reversed the Commission's Report and Order denying the application for a CCN. In particular, the Missouri Supreme Court ruled that the Commission's reliance on *ATXI* was in error, and that *ATXI* should not be followed to the extent that it held that an applicant for a CCN is required to obtain county assents pursuant to Section 229.100 before the MPSC can grant a CCN. The Missouri Supreme Court issued an Order remanding the case to the Commission on September 24, 2018, and the matter is now pending before the Commission for it to determine whether the Project is in the public interest.

Q. Is it your opinion that the overall facts concerning the Project remain substantially the same as when the application was denied by the PSC in August 2017?

A. Yes. The Concurring Opinion issued by four Commissioners on August 16, 2017 ("Concurring Opinion"), stated that but for *ATXI*, "we would have granted the GBE application as the evidence showed that the GBE Project is 'necessary or convenient for the public service.'"[4] The GBE Project is still necessary and convenient for the public service. The only significant change is with regard to the future ownership of the Project. As the proposed future owner, Invenergy has the financial resources and operational experience to successfully manage the GBE Project, as discussed in further detail below. Accordingly, the Project continues to satisfy all of the standards for approval of a CCN by the Commission.

Q. What is your understanding regarding the purpose of the current proceeding?

A. It is my understanding that the Commission's September 28, 2018 Order setting a procedural conference noted that the primary purpose of the procedural schedule in this

[3] *Grain Belt Express Clean Line LLC v. PSC*, 2018 WL 3432778, No. SC 96993 (Mo. en banc 2018).
[4] File No. EA-2016-0358, Concurring Opinion of Commissioners Hall, Kenney, Rupp, and Coleman in the Report and Order, p. 2 (August 16, 2017) (footnote omitted).

case is to receive "any evidence that has materially changed" since the filing of GBE's direct case in 2016. A review of the voluminous record in this docket establishes that the Project is needed, that the Project will have favorable economic impacts, and that the public interest factors required to be considered by the Commission have been fully met. Therefore, this Supplemental Direct Testimony will reinforce the record already received by the Commission and supplement the record to discuss the acquisition of the Project by Invenergy, including a discussion of Invenergy's managerial and operational qualifications to successfully own, operate, and manage the Project. The financial ability of Invenergy to own and operate the project is addressed by the Supplemental Direct Testimony of Andrea Hoffman, filed simultaneously herewith.

II. OVERVIEW OF INVENERGY

Q. Please provide an overview of Invenergy.

A. Headquartered in Chicago, Illinois, Invenergy is a U.S.-based company founded in 2001 and is North America's largest privately held company that develops, owns, and operates large-scale renewable and other clean energy generation, energy storage facilities, and electric transmission facilities across North America, Latin America, Japan and Europe. Invenergy's expertise includes a complete range of fully integrated in-house capabilities, including: Project Development, Permitting, Transmission, Interconnection, Energy Marketing, Finance, Engineering, Project Construction, Operations and Maintenance. To date, the Company has developed more than 20,046 MW of large-scale wind, solar, natural gas, and energy storage facilities. This includes more than 10,896 MW of projects in operation, with more than 9,150 MW contracted or in construction.

Q. Please provide an overview of Invenergy's leadership and business philosophy.

A. Invenergy's senior executives—each with more than 25 years in the energy generation industry—have worked together for more than two decades. Invenergy's founder, president and CEO Michael Polsky is a recognized and respected industry leader and is the majority owner of Invenergy and its affiliated companies. Profiles of Invenergy's Senior Management and Project Management teams are attached as Schedule KZ-5.

Invenergy values integrity, commitment to business partners and host communities, and environmental responsibility. Invenergy is also committed to U.S. military veterans, who make up approximately 11% of Invenergy's nearly 900 employees. Invenergy is also committed to an inclusive workplace and to being a responsible community partner. The Invenergy Impact Program builds ongoing, permanent relationships to connect with host communities and strengthen Invenergy's local presence. Invenergy engages with local organizations, providing volunteers, resources, and donations to a variety of causes including education, emergency medical services, veteran services and environmental stewardship. In 2017 Invenergy's energy centers in the United States and Canada donated more than $436,900 to local schools and charitable organizations.

Q. Please provide an overview of Invenergy's financial abilities.

A. Invenergy has extensive experience and success in raising capital for large scale energy projects. The financial abilities of Invenergy are discussed in more detail in the Supplemental Direct Testimony of Andrea Hoffman, Senior Vice President of Financial Operations.

Q. Please briefly describe how Invenergy plans to sell transmission service from the Project.

A. The transmission service offered by the Project will not change substantially from the services discussed by Clean Line witness David Berry in his Direct Testimony filed on June 30, 2016. Invenergy will offer transmission service on the line to generators, load serving entities, utilities or large commercial and industrial customers to deliver low-cost renewable resources from western Kansas to those potential off-takers in Missouri, Illinois and Indiana utilizing a "shipper pays" or participant-funded model. Initially, Invenergy anticipates it will enter into long-term transmission service or capacity contracts with its off-takers that require the transmission customer to pay a negotiated reservation charge. Any future sale of capacity will be governed by an Open Access Transmission Tariff ("OATT"), just as is the case for traditional, cost of service transmission providers.

III. QUALIFICATIONS OF INVENERGY TO OWN AND OPERATE THE PROJECT

Q. Please briefly describe Invenergy's qualifications to efficiently manage and supervise the construction process for the Grain Belt Express Project.

A. Invenergy routinely develops projects with a view toward long-term ownership, performance, profitability and operations. Invenergy has built its core competencies around power plant operations and maintenance ("O&M"). Invenergy operates its power plant fleet through the wholly owned subsidiary, Invenergy Services. Invenergy Services is staffed with experienced industry personnel and currently operates 10,896 MW of natural gas and renewable generating capacity in North America. Combining asset management, operations, maintenance, and commercial execution functions allows Invenergy Services to provide a single, comprehensive solution to overall management of the asset.

Q. Does Invenergy have experience developing and maintaining transmission projects?

A. Yes. Because the core of Invenergy's business model is project development and long-term ownership and operations, the Company takes great care to ensure the longevity, reliability and cost-effectiveness of its assets, especially transmission and interconnection infrastructure for its projects. Since 2001, Invenergy has built all required transmission and distribution lines, generator step-up transformers ("GSUs"), and substations for its facilities in numerous regions, including within the regions managed by Southwest Power Pool, Inc. ("SPP"), Midcontinent Independent System Operator, Inc. ("MISO") and PJM Interconnection, LLC ("PJM"). Invenergy developed, permitted and constructed this infrastructure across various terrains, state and local jurisdictions, and in vastly differing environmental and regulatory conditions. This experience adds to over 392 miles of high-voltage transmission lines, over 1,748 miles of distribution lines, 59 substations and 73 GSUs of which several have been built for utilities.

Invenergy excels at building infrastructure by working diligently with landowners to build trustworthy relationships, ensuring that the landowners' interests are protected, and their concerns are taken into account. Invenergy has negotiated leases with over 13,000 landowners constituting over 10 million acres. In this regard, Invenergy Transmission supports the conditions that GBE agreed to with MPSC Staff in Exhibit 206 and with Rockies Express Pipeline LLC in Exhibit 205.

Q. Who are the individuals at Invenergy that will manage and direct the construction and operation of the Project and what are their specific duties and qualifications?

A. Chris Carter is Director, Renewable Project Management for Invenergy and has 16 years of experience in right-of-way issues, material procurement, contract negotiation, and construction of electrical transmission and substations. He will be supported by Bryan

Schueler, the Executive Vice President and Chief Development Officer for Invenergy and a 20-year veteran of the power industry. The team will also include Art Fletcher, Senior Vice President, Renewable Engineering and Project Management for Invenergy, who brings 29 years of experience in managing heavy civil and power construction projects domestically and abroad. Profiles of the foregoing individuals are provided in Schedule KZ-5.

Q. Are you familiar with the testimony previously filed in this proceeding by Dr. Wayne Galli, who served as Clean Line's Executive Vice President, Transmission and Technical Services?

A. Yes, I am familiar with Dr. Galli's testimony. He described the physical and operating characteristics of the Project, the plans and schedule for construction, and potential vendor contracts. It is my understanding that Dr. Galli's testimony will be adopted and supplemented by Jonathan Abebe.

Q. Does Invenergy have any current plans to make substantial changes to the Project as described by Dr. Galli?

A. No.

Q. Please describe Invenergy's approach to project management and construction, including the hiring an engineering, procurement and construction ("EPC") contractor.

A. Invenergy has contracted for construction work on its renewable energy projects in a variety of manners ranging from executing full EPC contracts to executing individual specialty contracts with engineering, construction, and supply firms. Each project is assessed on a basis of risk and economics with the chosen means of execution based upon

the most favorable overall result for the project. For renewable projects, Invenergy typically executes separate major component procurement contracts, electrical engineering contracts, balance of plant type construction contracts, and high-voltage substation and transmission line contracts. These contracts are executed and managed by Invenergy project management teams based in Chicago and Invenergy site management teams based in the field. Art Fletcher will oversee all project engineering and construction activities, including the management of a top tier construction firm contracted to build the facility.

Q. What is the status of engineering procurement and construction contracts for the GBE Project?

A. Upon acquisition of the GBE Project, Invenergy plans to evaluate any existing contracts GBE has in place and determine how they may align with Invenergy's plan to advance the GBE Project. Invenergy will likely retain an Owner's Engineer ("OE") experienced with HVDC technology to work with Invenergy in approaching major HVDC manufacturers and equipment suppliers such as General Electric, Siemens, ABB, and NR Electric. Invenergy and the OE will work with manufacturers to select contractors based on request for proposal ("RFP") responses received from the pool of experienced contractors that Invenergy and/or the manufacturers have utilized in the past. Any construction contractors chosen for this work are first evaluated for relevant experience, current safety records, and current financial strength prior to award of any contract. Invenergy routinely works with top tier companies with successful track records and will choose an experienced EPC to construct the Project. EPC Contractors with experience in HVDC technology that may be approached for the GBE Project include, but are not

limited to, Quanta Services, Kiewit, Mortenson, and MYR Group. In this regard, I have reviewed the Direct Testimony submitted in this case by Thomas F. Shiflett of Quanta Services. The EPC that is chosen by Invenergy will have the qualifications and experience Mr. Shiflett discusses, and will follow the emergency response and restoration best practices that he generally describes.

Invenergy will choose contractors as the development process continues to best support cost effectiveness and a completion date approximately 4 years after the start of construction. At this time, Invenergy estimates that construction would begin in 2020.

IV. OVERVIEW OF THE TARTAN CRITERIA

Q. Are you familiar with the Tartan Criteria that the Commission uses in its evaluation of CCN applications?

A. Yes. It is my understanding that, in its review of CCN applications, the Commission has traditionally applied the following five criteria, known as the Tartan Criteria: (1) there must be a need for the service the applicant proposes to provide; (2) the applicant's proposal must be economically feasible; (3) the applicant must have the financial ability to provide the service; (4) the applicant must be qualified to provide the proposed service; and (5) the proposed service must be in the public interest.

Q. Please explain why there is a need for the service that GBE proposes to provide.

A. The Concurring Opinion found that "the GBE project is needed primarily because of the benefits to the members of the Missouri Joint Municipal Electric Utility Commission ("MJMEUC") and their hundreds of thousands of customers, who had committed to purchase at least 100 MW of wind power utilizing transmission service purchased from

GBE."[5] MJMEUC is made up of 67 members that serve approximately 347,000 retail customers who have a combined peak load of over 2,600 MW. MJMEUC estimated that the purchase of transmission capacity from Kansas to Missouri from the Project will save members $9-11 million annually compared to an existing contract for fossil fuel generation.[6] The TSA was recently reaffirmed by MJMEUC through an amendment which is discussed in the supplemental direct testimony of Grain Belt Express witness David Berry and of MJMEUC witness John Grotzinger.

A strong need for the new service that will be provided by the Project was also demonstrated by the open solicitation process that Grain Belt Express held from January to March 2015, through which customers could subscribe for capacity on the Project. It is my understanding that fifteen shippers made 3,524 MW of requests for capacity to the Project's MISO delivery point in Missouri, which is more than six times the available capacity. GBE witness David Berry described the open solicitation process in more detail in his Direct Testimony.[7]

The open access transmission service to be offered will allow users to meet the requirements of Missouri's Renewable Energy Standard ("RES"), as well as the renewable portfolio standard ("RPS") requirements of other states served by the MISO and PJM energy markets. The Project will deliver low-cost renewable wind generation that will save consumers in Missouri and other states hundreds of millions of dollars compared to other more expensive sources of generation. Based on a levelized cost of energy analysis, described in the Direct Testimony of David Berry, the Project's delivered cost is cheaper than building wind farms locally in Missouri; it is also cheaper

[5] Concurring Opinion at 2-3.
[6] Id. at p. 3.
[7] Direct Testimony of David A. Berry at 24-25 (Aug. 30, 2016) ("Berry Direct").

than solar power and a new combined cycle natural gas power plant.[8] Because the Project is the lowest-cost way to meet renewable energy and other electric demand, it is needed to serve the public.

Additionally, the Missouri converter station will offer bi-directional service, allowing Missouri utilities the opportunity to sell up to 500 MW of excess power to PJM.

Q. Please explain how the Project is economically feasible.

A. The Grain Belt Express Project is a participant-funded project such that GBE assumes all financial risk of building and operating the transmission line. The Project costs will not be recovered from Missouri ratepayers through either SPP or MISO regional cost allocation tariffs. Witnesses Suedeen Kelly and David Berry discussed the merits of a participant funded transmission line in their Direct Testimonies filed earlier in this proceeding.[9]

The HVDC technology employed by the Project is the most cost-effective and efficient way to move large amounts of renewable energy over a long distance. High capacity factor wind energy sourced from western Kansas is the cheapest form of renewable energy in the Midwest. Consequently, the Project's delivered energy cost to Missouri and neighboring states, including the costs of transmission, will be cheaper than alternatives to meet the demand for both renewable and non-renewable energy resources. Witness David Berry described this in more detail in his Direct Testimony.[10]

Q. Is it your opinion that Invenergy has the financial ability to provide the proposed service?

[8] *Id*. at 28-29.
[9] *See* Berry Direct at 9; Direct Testimony of Suedeen G. Kelly at 3-14 (Aug. 30, 2016)("Kelly Direct").
[10] *See* Berry Direct at 28-29.

A. Yes. Invenergy has the financial ability to provide the proposed service. As described in the Supplemental Direct Testimony of Andrea Hoffman, Invenergy has a strong financial profile and a proven track record of financing large energy projects.

Q. Is it your opinion that Invenergy is qualified to provide the proposed service?

A. Yes. Invenergy is qualified to provide the proposed service. As described earlier in my testimony, the management team of Invenergy has extensive experience developing, constructing, and operating a variety of energy projects, including transmission.

Q. Please summarize your arguments demonstrating that the Project is in the public interest.

A. The Project is in the public interest for numerous reasons, as discussed herein and in the prior proceedings. The low-cost wind energy delivered by the Project will benefit the State of Missouri by offering low cost Kansas wind energy that is not available to them today because of the lack of transmission infrastructure. That Kansas wind energy is cheaper than alternative sources of power, resulting in wholesale electric market savings without increasing the transmission component of rates paid by end-use customers. Because the Project will deliver renewable energy, it will provide Missouri load-serving entities with a cost-effective way to meet their energy needs.

The Missouri Department of Economic Development estimated that the Project will create more than 1,500 jobs during the three years of construction.[11] Additionally, the Project will provide a continuing source of property tax revenues to the political subdivisions where the facilities are located.[12] The Project is a participant-funded, "shipper pays" transmission line, which means that the benefits of the Project's service

[11] Concurring Opinion at p. 5.
[12] *Id*. at 5-6.

will be made available to the public without socializing transmission costs to load serving entities or their customers. Grain Belt Express will recover its capital costs by entering into voluntary, market-driven contracts with entities that want to become transmission customers of the Project.

The Project's interconnection to Ameren's Maywood-Montgomery 345 kV transmission line will enhance the reliability of the electric transmission network in Missouri by connecting geographically diverse parts of the electric grid and by providing a new source of electricity for Missouri. Regional and interregional transmission projects are often more efficient and cost-effective than local transmission projects and provide a wide range of benefits, including relieving transmission congestion, increasing installed revenue margins, exporting excess generation, importing low-cost power, and, in the case of interregional transmission projects, such as the Project, relieving seams issues.[13]

Q. Does this conclude your testimony?

A. Yes.

[13] *See* Kelly Direct at 15-19.

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, Control, Manage, Operate 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-2016-0358

AFFIDAVIT OF KRIS ZADLO

STATE OF Illinois)
) **ss**
COUNTY OF Cook)

Kris Zadlo, being first duly sworn upon his oath, states:

1. My name is Kris Zadlo. I am Senior Vice President, Commercial Analytics, Regulatory Affairs and Transmission for Invenergy LLC.

2. Attached hereto and made a part hereof for all purposes is my Supplemental Direct Testimony on behalf of Grain Belt Express Clean Line LLC, having been prepared in written form for introduction into evidence in this proceeding.

3. I have knowledge of the matters set forth herein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Kris Zadlo

Subscribed and sworn before me this 12th day of November 2018.

Notary Public

ERIKA M CLIFFORD
Official Seal
Notary Public – State of Illinois
My Commission Expires Nov 6, 2021