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Witness: Jonathan Abebe
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Sponsoring Party: Grain Belt Express Clean Line LLC
Case No. EA-2016-0358
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EA-2016-0358

SUPPLEMENTAL DIRECT TESTIMONY OF

JONATHAN ABEBE, P.E.

ON BEHALF OF

GRAIN BELT EXPRESS CLEAN LINE LLC

November 12, 2018

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1 **I. INTRODUCTION AND QUALIFICATIONS**

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

3 A. My name is Jonathan Abebe. I am responsible for transmission engineering,
4 interconnection, and technical services for Clean Line Energy Partners LLC (“Clean
5 Line”) and the Grain Belt Express Project. My business address is 1001 McKinney
6 Street, Suite 700, Houston, Texas 77002. I also serve as Director of Transmission for
7 Pattern Energy Group LP.

8 **Q. Have you previously submitted testimony in this proceeding?**

9 A. No, but I am adopting the previously submitted testimony of Dr. A. Wayne Galli.

10 **Q. What is the purpose of this supplemental direct testimony?**

11 A. The purpose of my supplemental direct testimony is to report any material changes to Dr.
12 Galli’s testimony which: (1) provided an overview of the Grain Belt Express Clean Line
13 transmission project (“Grain Belt Express Project” or “Project”) and the Project’s three
14 points of interconnection with the existing alternating current (“AC”) grid; (2) explained
15 why Grain Belt Express has decided to utilize high-voltage direct current (“HVDC”)
16 technology for the Project; (3) described the types of transmission structures that are
17 suitable for use on the Project; (4) described the process and status of interconnecting
18 each terminal of the Project with the relevant regional planning authorities of Southwest
19 Power Pool, Inc. (“SPP”), the Midcontinent Independent System Operator, Inc.
20 (“MISO”) and PJM Interconnection, LLC (“PJM”), as well as how the Project will ensure
21 compliance with the North American Electric Reliability Corporation (“NERC”) and
22 other reliability standards; (5) provided an overview of how the Project will operate its
23 interconnections with each of SPP, MISO, and PJM; (6) explained how Grain Belt
24 Express will design and construct the Project ensuring safety and reliability; and (7)

1 discussed the very unlikely possibility of interference to GPS systems that are typical for
2 use in agriculture.

3 **Q. Please describe your education and professional background.**

4 A. I received a bachelor of applied science degree from the University of Toronto, Ontario,
5 Canada and a master of science degree from Worcester Polytechnic Institute in
6 Massachusetts. Both degrees were in the field of electrical engineering. I am a member
7 of the Institute of Electrical and Electronic Engineers, and a registered professional
8 engineer in the Commonwealth of Massachusetts.

9 I have over 14 years of experience in the electric transmission industry, ranging
10 from power system planning, power system outage planning, asset management, and
11 project development. Prior to my time with Clean Line, I worked as a lead power
12 systems engineer for Vestas Technology, a leading wind turbine manufacturer. Before
13 that I was with National Grid USA, a large electric and gas utility operating in the
14 northeastern United States. I served in a variety of engineering roles related to electric
15 transmission planning, asset strategy, and operations. Prior to that, I was with
16 GridAmerica LLC, a subsidiary of National Grid USA, working on electric transmission
17 outage assessment in MISO.

18 **Q. Have you testified previously before any regulatory commissions?**

19 A. No.

20 **II. OVERVIEW OF PROJECT**

21 **Q. Are there any material changes to this topic?**

22 A. No. Regarding the Missouri converter station, the Company intends to exercise or
23 renegotiate its option to purchase the property in Ralls County on which the converter
24 station will be constructed.

1 **III. NEW DEVELOPMENTS**

2 **Q. Are there any new developments in the engineering, design, construction, and other**
3 **technical activities with respect to the Grain Belt Express Project?**

4 A. No. As previously discussed by Dr. Galli in his testimony, the Project is to follow the
5 Performance Specification developed for Clean Line’s Plains & Eastern Project, given
6 how materially similar both of these projects are. Despite the sale of the Oklahoma
7 portion of the Plains & Eastern Project to NextEra, as discussed in Mr. Skelly’s
8 supplemental direct testimony, the Grain Belt Express Project still shares many of the key
9 attributes that were assumed during the development of the Performance Specification for
10 Plains & Eastern. Therefore, the Company can still utilize much of the previously
11 completed work on the Plains & Eastern Project’s Performance Specification for the
12 Grain Belt Express Project.

13 **IV. RELIABLE INTERCONNECTION AND OPERATION OF THE GRAIN BELT**
14 **EXPRESS PROJECT**

15 **a. SPP Interconnection Process and Status**

16 **Q. Are there any material changes regarding the Project’s interconnection agreement**
17 **and related issues in Southwest Power Pool?**

18 A. There are no material changes. The western terminus of the Grain Belt Express Project
19 (“Project”) will interconnect to the ITC Great Plains (“ITC”) 345 kV system in SPP (with
20 a tap of ITC’s Spearville to Clark County and Ironwood to Clark County 345 kV
21 transmission lines in Ford County in southwestern Kansas, near Dodge City).

22 On September 6, 2013, the SPP’s Transmission Working Group approved the
23 Criteria 3.5 studies inclusive of additional analysis that assessed the project at the tap of
24 the Clark County to Spearville/Ironwood 345 kV line. Following the completion of

1 Criteria 3.5 studies, Grain Belt Express and ITC entered into a Facilities Study
2 Agreement on September 30, 2014. On March 19, 2015, ITC completed the Facilities
3 Study, which identified the required attachment facilities, as well as about \$21 million of
4 improvements needed to physically interconnect the Project's Kansas converter station to
5 ITC's 345 kV system in Ford County, Kansas. On October 17, 2016, an Interconnection
6 Agreement was executed by ITC, SPP, and Grain Belt Express for the Project's Kansas
7 converter station. Grain Belt Express and ITC are currently in the process of updating the
8 Interconnection Agreement.

9 **b. PJM Interconnection Process and Status**

10 **Q. Are there any material changes regarding the interconnection process related to**
11 **PJM Interconnection LLC ("PJM")?**

12 A. There are no material changes, but I will provide certain updates. PJM is engaged in
13 performing a supplemental System Impact Study, referred to as a "retooled" study in Dr.
14 Galli's surrebuttal testimony and at the evidentiary hearing, as well as a Facilities Study
15 Agreement. At the present time there has been no increase in the estimated costs that will
16 be required to upgrade the transmission system to accommodate the 3,500 MW injection
17 in PJM at the Illinois/Indiana border.

18 On December 8, 2017, PJM released an updated draft System Impact Study
19 ("SIS") report to the SIS that was issued in October 2014. The results of this latest draft
20 SIS are consistent with the 2014 Study. The draft 2017 SIS identified the following
21 Network Upgrades:

22 • A new AEP 765 kV transmission line from the Sullivan substation to
23 Northern Indiana Public Service Company's new Reynolds substation at an estimated

1 cost of \$464 million (which includes an estimated \$6 million for work at the Sullivan
2 Station and \$16 million at the Reynolds Station).

3 • A wavetrap at AEP's Dumont 765 kV substation at an estimated cost of \$1
4 million.

5 Grain Belt Express is waiting for PJM to release the Facilities Study report which
6 will include the final System Impact Study, as well as the detailed project schedule and
7 final cost estimates for the identified Network Upgrades. PJM has not indicated when it
8 expects to release the Facilities Study report, so it is unclear if this report will be released
9 in 2018.

10 **c. MISO Interconnection Process and Status**

11 **Q. What are the material changes that have occurred regarding the Company's**
12 **interconnection efforts in MISO?**

13 A. There are no material changes, however, I can provide updated information. At the
14 present time there has been no increase in the estimated costs that will be required to
15 upgrade the transmission system to accommodate the 500 MW injection in MISO at the
16 converter station planned for Ralls County, Missouri. The Company estimates that
17 approximately \$21 million will be allocated to Missouri upgrades in MISO.

18 Grain Belt Express has withdrawn from the MISO generator interconnection
19 queue to await the proper time to refile when the PJM studies have been completed.
20 However, on October 12, 2018 the Federal Energy Regulatory Commission ("FERC")
21 approved MISO's proposed set of connection procedures and a connection agreement for
22 Merchant High Voltage Direct Current ("MHVDC") transmission projects. MISO's
23 proposal to revise its Generator Interconnection Procedures in Attachment X of its tariff

1 to include an injection rights construct for the use of MHVDC connection customers was
2 also approved. See Order Accepting Tariff Provisions, Midcontinent Indep. System
3 Operator, Inc., No. ER18-1410, 165 FERC ¶ 61,016 (Oct. 12, 2018). Under this new
4 tariff MISO is now able to grant injection rights to generation facilities connecting to the
5 Project’s Kansas converter station. This development provides additional commercial
6 certainty for the Grain Belt Express converter station in Ralls County.

7 Although the Company is not currently active in the MISO interconnection
8 process, it plans to enter the final study stage of MISO’s interconnection process (known
9 as the Definitive Planning Phase or “DPP”) after (1) the PJM interconnection studies
10 have sufficiently progressed and (2) the Company is able to meet the readiness
11 milestones for the MISO interconnection process. Coordination of the MISO study
12 process with that of PJM will allow for the results of the PJM studies to be incorporated
13 into the scope of the DPP.

14 **V. COORDINATION, DISPATCH, AND OPERATION OF THE PROJECT**

15 **Q. Are there any material changes regarding these issues?**

16 A. No.

17 **VI. CONSTRUCTION ACTIVITIES**

18 **Q. Are there any material changes regarding the issues discussed on this topic?**

19 A. No.

20 **VII. IMPACTS TO GPS**

21 **Q. Are there any material changes regarding issues related to global positioning**
22 **systems and their effect on farming equipment, as addressed in Dr. Galli’s**
23 **testimony?**

24 A. No.

1 **Q. Does this conclude your supplemental direct testimony?**

2 **A. Yes, it does.**

