

Exhibit No.:480  
Issue: Application of Grain Belt Express Clean Line LLC - CCN  
Witness: John Grotzinger  
Type of Exhibit: Supplemental Direct Testimony  
Sponsoring Party: MJMEUC  
File No.: EA-2016-0358

**BEFORE THE PUBLIC SERVICE COMMISSION**

**OF THE STATE OF MISSOURI**

**FILE NO. EA-2016-0358**

**SUPPLEMENTAL DIRECT**

**TESTIMONY AND**

**EXHIBITS**

**OF**

**JOHN GROTZINGER ON**

**BEHALF OF**

**THE MISSOURI JOINT MUNICIPAL ELECTRIC  
UTILITY COMMISSION (MJMEUC)**

**NOVEMBER 12, 2018**

MJMEUC Exhibit No. 480  
Date 12-14-18 Reporter JG  
File No. EA-2016-0358

1 **I. INTRODUCTION AND BACKGROUND**

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

3 A. My name is John Grotzinger. I am the Chief Operating Officer (COO) and Executive Director for  
4 Engineering and Operations of the Missouri Joint Municipal Electric Utility Commission  
5 (MJMEUC). MJMEUC's business address is 1808 I-70 Drive SW, Columbia, MO 65203.

6 **Q. Are you the same John Grotzinger who previously gave Rebuttal, Surrebuttal, and testified  
7 in person in this case?**

8 A. Yes.

9 **Q. Have there been any material changes to the testimony you previously gave?**

10 A. Except as discussed below, no.

11 **Q. Are you familiar with the previously admitted testimony of Duncan Kincheloe (Exh. 475)  
12 and his testimony before this Commission, as well as the issues he testified upon?**

13 A. Yes.

14 **Q. Has the previously admitted testimony of Duncan Kincheloe (Exh. 475) or his testimony  
15 changed in any material manner?**

16 A. No.

17  
18 **II. AMENDED TRANSMISSION SERVICE AGREEMENT WITH**  
19 **GRAIN BELT EXPRESS CLEAN LINE LLC**  
20

21 **Q. Is the Transmission Service Agreement with Grain Belt the same contract as previously  
22 reviewed?**

23 A. No. The Grain Belt Transmission Service Agreement ("Grain Belt TSA") has been amended, and  
24 the amendment is included in this testimony as Schedule JG-9.

25 **Q. What is the material impact of the amendment?**

26 A. It lowers the transmission price of the second tranche to the same price of the first tranche. This

1 means that the entire 200 MW transmission service agreement price is priced at \$1,167/Mw-  
2 month, which is a 30% decrease in the price of the second 100 MW tranche (previously  
3 \$1,667/Mw-month), and a 17.6% decrease in the overall cost of the full 200 MW transmission  
4 service agreement.

5 **Q. Did you calculate the changes to transmission costs as previously calculated in Schedule JG-**  
6 **3 (Grain Belt TSA versus traditional SPP to MISO Point-to-Point service) and Schedule JG-**  
7 **5 (total delivered price of the Grain Belt/Iron Star Project into MISO) to reflect the**  
8 **Amended Grain Belt TSA?**

9 A. Yes. The transmission cost savings are calculated in Schedule JG-3 and are updated in Schedule  
10 JG-10. The savings from the Grain Belt TSA versus a traditional SPP to MISO Point-to-Point  
11 service agreement are approximately \$2,800,000 annually. Those savings are derived from (1) the  
12 additional decrease in costs of the Grain Belt TSA as reflected in Schedule JG-9, and (2) the costs  
13 of SPP to MISO Point-to-Point transmission service having risen from \$2,880/Mw-month as  
14 presented in Schedule JG-3, to the current rate of \$3,800/Mw-month, as presented in Schedule JG-  
15 10, which is more than three times as much as the Grain Belt TSA. The SPP to MISO Point-to-  
16 Point transmission service charges are based upon charges that MJMEUC has historically and  
17 currently pays. I have no expectation that the transmission rate from SPP into MISO will be  
18 reduced, or ever approach the Grain Belt TSA rate of \$1,167/Mw-month.

19 Additionally, Schedule JG-5 was updated to reflect the material savings in the delivered cost of  
20 energy and capacity in Schedule JG-11, regardless of the amount of transmission used, at a price  
21 of \$19.70/MWh.

22  
23 **Q. How does the Amended Grain Belt TSA compare with other resources as originally**  
24 **compared in Schedule JG-6?**

25 A. The additional savings are material, and are reflected in Schedule JG-12. In particular, when

1 comparing the Grain Belt TSA/Iron Star project to SPP wind options, an additional \$1,000,000 in  
2 annual savings occurs if 135 MW of the transmission service agreement is utilized.

3 **Q. What is the impact on the MoPEP committee?**

4 A. It will result in additional material savings. I have updated Schedule JG-7 with Schedule JG-13 to  
5 reflect the additional value added by this amendment. Those additional savings are expected to be  
6 \$179,760 annually, in addition to previous annual savings of approximately \$11 million versus the  
7 existing contract for Illinois coal resources.

8 **Q. Are there any other material changes to inform the Commission?**

9 A. Other than the obligation to post additional security as described in the Amended Grain Belt TSA  
10 (Schedule JG-9), no.

11 **Q. Does this conclude your pre-filed direct supplemental testimony in this case?**

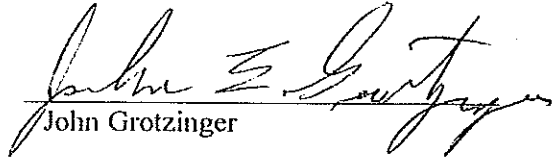
12 A. Yes. However, I wish to preserve the right to provide additional testimony in the form of sur-  
13 rebuttal or at the hearing to rebut the pre-filed testimony filed by another party.

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI

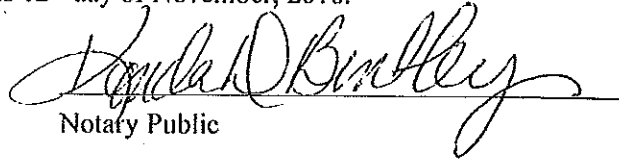
STATE OF MISSOURI                    )  
                                                  )    SS  
COUNTY OF BOONE                    )

AFFIDAVIT OF JOHN GROTZINGER

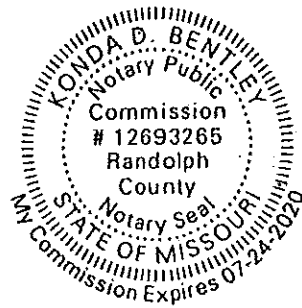
John Grotzinger, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying direct supplemental testimony and schedules; that said testimony was prepared by him or under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

  
John Grotzinger

Subscribed and sworn to before me this 12<sup>th</sup> day of November, 2018.

  
Notary Public

My commission expires: 7/24/2020



**INTERIM AGREEMENT AND AMENDMENT**

This **INTERIM AGREEMENT AND AMENDMENT** (this "Interim Agreement"), dated as of November 12, 2018, is entered into by and between Grain Belt Express Clean Line LLC ("GBX") and the Missouri Joint Municipal Electric Utility Commission ("MJMEUC"; each of GBX and MJMEUC, a "Party", and together, the "Parties"). Capitalized terms used herein but not defined herein shall have the meanings ascribed to such terms in that certain Long-Term Transmission Service Agreement, dated as of June 2, 2016 (as amended, amended and restated, supplemented and/or modified from time to time, the "Transmission Agreement").

WHEREAS, MJMEUC has requested that GBX deliver to MJMEUC on or prior to December 31, 2019, and maintain thereafter in connection with the Transmission Agreement until the date on which GBX issues notice to proceed for the construction of the Project to one or more of its primary contractors, credit support in the amount of Three Million Four Hundred Thousand Dollars (\$3,400,000) (the "Credit Support"); and

WHEREAS, GBX is willing to negotiate terms and conditions in respect of the Credit Support, including, without limitation, the period for which such Credit Support shall be in effect, MJMEUC's remedies in respect thereof, the conditions precedent to draws on the Credit Support by MJMEUC, the permitted amount and timing of such draws and such other adjustments to the terms of the Transmission Agreement as may be appropriate in connection with the foregoing; and

WHEREAS, the Parties have agreed, pursuant to Section 19.2 of the Transmission Agreement and subject to the terms and conditions of this Interim Agreement, that the Transmission Agreement be amended to reflect certain agreed upon revisions to Attachment 1 thereto.

NOW, THEREFORE, in consideration of the foregoing premises, the terms and conditions stated herein, and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the parties hereto, such parties hereby agree as follows:

1. The Transmission Agreement is hereby amended by replacing Attachment 1 thereto in its entirety with the revised attachment set forth in Annex I hereto.
2. The Parties hereby agree to negotiate in good faith to enter into a further amendment to the Transmission Agreement (the "Second Amendment") on or before December 15, 2018, establishing mutually acceptable terms and conditions in respect of the Credit Support.
3. Except as expressly set forth in numbered paragraph 1 hereof, all of the terms and conditions of the Transmission Agreement remain in full force and effect, and none of such terms and conditions are, or shall be construed as, otherwise waived, amended or modified by this Interim Agreement. For the avoidance of doubt, neither Party shall have any obligation hereunder in respect of the Second Amendment or the Credit Support except as expressly stated herein.
4. This Interim Agreement embodies the entire agreement and understanding between the Parties in respect of the subject matter hereof.


5. This Interim Agreement shall be construed and enforced in accordance with, and the rights of the parties hereto shall be governed by, the law of the State of New York excluding choice of law principles of the law of such State that would permit the application of the laws of a jurisdiction other than such State.

6. This Interim Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be an original but all of which together shall constitute one instrument. Each counterpart may consist of a number of copies hereof, each signed by less than all, but together signed by all, of the parties hereto. Delivery of an executed counterpart of a signature page to this Interim Agreement by facsimile or other electronic delivery shall be effective as delivery of a manually executed counterpart of this Interim Agreement.

*[Remainder of page intentionally left blank]*


IN WITNESS WHEREOF, the parties hereto have caused this Interim Agreement to be duly executed as of the day and year first above written.

**GRAIN BELT EXPRESS CLEAN LINE LLC,**  
as GBX

By:  \_\_\_\_\_  
Name: David Berly  
Title: Authorized Representative



MISSOURI JOINT MUNICIPAL ELECTRIC  
UTILITY COMMISSION,  
as MJMEUC

By:   
Name: Duncan Kincheloe  
President, General Manager + CEO

ANNEX I

**REVISED ATTACHMENT 1  
 TO THE  
 LONG-TERM TRANSMISSION SERVICE AGREEMENT  
 BY AND BETWEEN  
 GRAIN BELT EXPRESS CLEAN LINE LLC  
 AND  
 THE MISSOURI JOINT MUNICIPAL ELECTRIC UTILITY COMMISSION**

Dated as of November 12, 2018

**Transmission Customer:** Missouri Joint Municipal Electric Utility Commission

KS-MO Transmission Service

**Reserved Contract Capacity:** 200 MW, measured at the Point of Delivery

**Beginning Date of Service:** Commencement Date (to be determined)

**Ending Date of Service:** 15 to 25 years after the Commencement Date, as elected by Transmission Customer in the Notice of Decision

**Point of Receipt:** The AC switchyard of the Kansas Converter Station

**Point of Delivery:** MISO Interconnection Point

**Contract Rate:** \$1,167 per MW/month, escalating at 2 percent (2%) annually beginning with the first anniversary of the Commencement Date

MO-PJM Transmission Service

**Reserved Contract Capacity:** 25 MW, measured at the Point of Receipt

**Beginning Date of Service:** Commencement Date (to be determined)

**Ending Date of Service:** The second anniversary of the Commencement Date (i.e., 2 years), with continuing rights for additional periods up to a total term of 26 years (i.e., subject to

Transmission Customer's Extension Rights)

**Point of Receipt:**

MISO Interconnection Point

**Point of Delivery:**

PJM Interconnection Point

**Contract Rate:**

\$2,500 per MW/month

**JG-10**

**COMPARISON BETWEEN GRAIN BELT PROJECT VS. SPP TO MISO**

	SPP Trans Rate PTP Throuh/Out	Capacity Factor	Contract Price \$/MWh	\$/MWh	Congestion \$/MWh	Prices \$/MWh	\$/MWh	\$/MWh
Approximately	\$3800/MW-mo	50.00%	20	2	4	6	8	10
		Energy Generated MWh	Line Losses @ 3%	Congestion	Congestion	Congestion	Congestion	Congestion
60 MW SPP Total Cost	\$2,736,000	262,800	\$157,680	\$525,600 \$3,419,280	\$1,051,200 \$3,944,880	\$1,576,800 \$4,470,480	\$2,102,400 \$4,996,080	\$2,628,000 \$5,521,680
100 MW SPP Total Cost	\$4,560,000	438,000	\$262,800	\$876,000 \$5,698,800	\$1,752,000 \$6,574,800	\$2,628,000 \$7,450,800	\$3,504,000 \$8,326,800	\$4,380,000 \$9,202,800
135 MW SPP Total Cost	\$6,156,000	591,300	\$354,780	\$1,182,600 \$7,693,380	\$2,365,200 \$8,875,980	\$3,547,800 \$10,058,580	\$4,730,400 \$11,241,180	\$5,913,000 \$12,423,780
200 MW SPP Total Cost	\$9,120,000	876,000	\$525,600	\$1,752,000 \$11,397,600	\$3,504,000 \$13,149,600	\$5,256,000 \$14,901,600	\$7,008,000 \$16,653,600	\$8,760,000 \$18,405,600
60 MW TSA Grain Belt Cost	\$840,000			\$840,000	\$840,000	\$840,000	\$840,000	\$840,000
200 MW TSA Grain Belt Cost	\$ 2,800,000			\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000
Total Transmission Cost Savings at 60 MW TSA				\$2,579,280	\$3,104,880	\$3,630,480	\$4,156,080	\$4,681,680
Total Transmission Cost Savings at 60 MW TSA Schedule JG-3				\$1,736,880	\$2,262,480	\$2,788,080	\$3,313,680	\$3,839,280
Total Transmission Cost Savings at 200 MW TSA				\$8,597,600	\$10,349,600	\$12,101,600	\$13,853,600	\$15,605,600
Total Transmission Cost Savings at 200 MW TSA Schedule JG-3				\$5,789,600	\$7,541,600	\$9,293,600	\$11,045,600	\$12,797,600

JG-11

Source	Grain Belt and Infinity Wind Power				
MW	200	100	125	150	175
MWh	876000	438000	547500	657000	766500
Cap. Factor	0.5	0.5	0.5	0.5	0.5
\$/MWh	16.5	16.5	16.5	16.5	16.5
Energy \$	14,454,000	7,227,000	9,033,750	10,840,500	12,647,250
GB TX Rate	2,800,000	1,400,000	1,750,000	2,100,000	2,450,000
Total \$	17,254,000	8,627,000	10,783,750	12,940,500	15,097,250
<b>Total \$/MWh Delivered into MISO</b>	<b>19.70</b>	<b>19.70</b>	<b>19.70</b>	<b>19.70</b>	<b>19.70</b>
<b>Original Contract JG-5</b>	<b>20.38</b>	<b>19.70</b>	<b>19.97</b>	<b>20.15</b>	<b>20.28</b>

JG-12

Source	MISO						SPP	
	Grain Belt	Crystal Lake	Iowa wind	MO Wind	Solar	Crystal Lake II	SPP Wind	Combined Cycle
MW	135	135	135	135	135	135	135	135
MWh	591,300	378,432	532,170	449,388	212,868	413,910	591,300	591,300
Capacity Factor	0.50	0.32	0.45	0.38	0.18	0.35	0.50	0.50
\$/MWh	19.70	45.00	32.00	29.00	80.00	22.00	18.00	21.60
Energy \$	11,648,610	17,029,440	17,029,440	13,032,252	17,029,440	9,106,020	10,643,400	12,772,080
Congestion adder	-	7	5	2	(1)	7	1	1
Congestion \$	-	2,649,024	2,660,850	898,776	(212,868)	2,897,370	591,300	591,300
<b>Total \$</b>	<b>11,648,610</b>	<b>19,678,464</b>	<b>19,690,290</b>	<b>13,931,028</b>	<b>16,816,572</b>	<b>12,003,390</b>	<b>11,234,700</b>	<b>13,363,380</b>
Energy Delta MWh	-	212,868	59,130	141,912	378,432	177,390	-	-
2021 Avg. Ann. MWh/\$	-	10,958,445	3,044,012	7,305,630	19,481,679	9,132,037	-	-
<b>Total \$</b>	<b>11,648,610</b>	<b>30,636,909</b>	<b>22,734,302</b>	<b>21,236,658</b>	<b>36,298,251</b>	<b>21,135,427</b>	<b>11,234,700</b>	<b>13,363,380</b>
Annual Difference GBX/Alternative		18,988,299	11,085,692	9,588,048	24,649,641	9,486,817	(413,910)	1,714,770
							SPP trans	\$10,058,580
							Annual Difference GBX/Alt: \$	9,644,670
								\$11,773,350

Assumptions from Leidos Study

2021 Average Annual Energy Price	\$	51.48
Off Peak 2021 Average Annual Energy Price	\$	41.57
On Peak 2021 Average Annual Energy Price	\$	62.35

JG-13

**MOPEP SAVINGS**

		New			Existing			Total
MISO IPM		MISO Grain Belt	SPP Wind	SPP Comb. Cycle	SPP Higginsville Simple Cycle	SPP Marshall Wind	MC Power Solar	
	100 MW	60	25	50	38	20	16	102
	70% Cap. Factor	50%	45%	30%	5%	45%	18%	
	613,200 MWh	262,800	98,550	131,400	16,644	78,840	25,544	613,778
\$	15,435 \$/MW-month	\$ 1,167.00	\$ 2,880.00	\$ 6,000.00	\$ 1,070.00	\$ -	\$ -	
\$	22.56 \$/MWh	\$ 16.50	\$ 27.00	\$ 21.60	\$ 56.00	\$ 36.00	\$ 75.00	
\$	18,522,000 Ann. Capacity Cost	\$ 840,240	\$ 864,000	\$ 3,600,000	\$ 487,920	\$ -	\$ -	\$ 5,792,160
\$	13,833,792 Ann. Energy Cost	\$ 4,336,200	\$ 2,660,850	\$ 2,838,240	\$ 932,064	\$ 2,838,240	\$ 1,915,812	\$ 15,521,406
\$	<b>32,355,792.00</b> Total	\$ 5,176,440.00	\$ 3,524,850.00	\$ 6,438,240.00	\$ 1,419,984.00	\$ 2,838,240.00	\$ 1,915,812.00	\$ 21,313,566.00
	52.77 All-in Cost \$/Mwh	19.70	35.77	49.00	85.32	36.00	75.00	34.73
Annual Savings								\$11,042,226
Additional Annual Savings from JG-7								179,760