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**MISSOURI PUBLIC SERVICE COMMISSION**

**FILE NO.**

**EA-2023-0017**

**SURREBUTTAL TESTIMONY**

**OF**

**ROBERT BAKER**

**ON**

**BEHALF OF**

**GRAIN BELT EXPRESS LLC**

**MAY 15, 2023**

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1 I. INTRODUCTION

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

3 A. My name is Robert Baker. I am a Director in the Energy, Sustainability &  
4 Infrastructure Practice at Guidehouse, Inc. (“Guidehouse”). My business address is 100 King St  
5 W, Suite 4950, Toronto, ON M5X 1B1.

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

7 A. In my role as Director at Guidehouse, I am responsible for developing work streams  
8 and managing teams in areas of sustainable power system strategy and communicating this strategy  
9 within the industry. I provide strategic direction, encourage the exploration of system efficiency  
10 and innovation, direct research, and support the development of a reliable and resilient power  
11 systems.

12 Q. Please describe your education and relevant professional background.

13 A. I graduated from the University of Saskatchewan, Saskatoon, Saskatchewan with a  
14 Bachelor of Electrical Engineering in Power System Studies. I hold professional engineering  
15 licenses in two provinces, and I am a member of the IEEE.

16 In my role as Director at Guidehouse, I have provided consulting services to numerous key  
17 energy files which can be represented under four main headings: Transmission Planning and  
18 Energy Transition; Policy Development and FERC Order Reviews; Renewable Development and  
19 Offshore Wind Development; and Interconnection Queue Management and Resource  
20 Connections. Even though these four distinct areas address major industry initiatives, as can be  
21 expected, each of these areas can overlap with other areas. For example, I led a team in developing  
22 an approach for a developer who was seeking guidance on how to connect offshore wind farms to  
23 onshore power system facilities. The connection process included evaluating FERC 1000 and 2003  
24 (both under NOPR) as well as transmission planning, and resource interconnections. Other projects

1 included renewable connections, subscriber line analysis for competitive transmission projects,  
2 and full system net zero analysis and long-term costing of infrastructure to achieve a low carbon  
3 outcome. Prior to working at Guidehouse, I have served within the power industry in three different  
4 capacities: the utility sector, within an ISO, and as a consultant.

5 For the past 14 years, I have held senior leadership roles in consulting companies. In these  
6 roles I have led teams of professionals in areas of transmission planning, energy transition, system  
7 reliability and asset management, and specialty studies such as geomagnetic disturbance  
8 investigations and power system loss evaluations.

9 Prior to consulting, I assisted in the development of the Transmission Administrator (now  
10 AESO) in Alberta. Following the implementation of FERC 888 and 889, and the introduction of  
11 competitive wholesale markets, I developed novel policy and procedural approaches for planning,  
12 operations, forecasting, project management, technical analysis, and ancillary services. I worked  
13 in these areas during my time with the company. The approaches employed in these areas included  
14 congestion management principles, the integration of new generation, competitive transmission  
15 models, and regulatory applications.

16 Finally, my utility experience included the planning and execution of transmission  
17 infrastructure such as lines, real time operational support, and commissioning of new operations  
18 systems.

19 **Q. Please describe your background in performing reliability and resiliency studies.**

20 I have performed numerous reliability studies within the utility and ISO contexts. Many of  
21 the transmission studies I have performed or led have resulted in projects being developed and  
22 constructed. Further, following the implementation of FERC 888 and 889, I assisted in developing  
23 the first Alberta reliability management programs under NERC within the Western System

1 Coordinating Council (WSCC, now WECC). The scope of the reliability assessments included  
2 outage rates on lines to system wide investigations.

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

4 A. No, I have not.

5 **Q. What is the purpose of your surrebuttal testimony?**

6 A. I am adopting the Direct Testimony of Anthony Petti and I am responding to  
7 sections of the Rebuttal Testimony of Staff Witness Claire Eubanks, PE and Shawn Lange, PE  
8 relating to the Guidehouse Report.

9 **Q. Have you had an opportunity to review Mr. Petti's Direct Testimony?**

10 A. Yes, I have.

11 **Q. And if you were asked the same questions posed in Mr. Petti's Direct Testimony,  
12 would your answers be the same as those provide by Mr. Petti?**

13 A. Yes, they would be.

14 **Q. Are you sponsoring any schedules or exhibits as part of your surrebuttal testimony?**

15 A. Yes, I am sponsoring the following exhibits/schedules:

- 16
  - Schedule RB-01 – Response to Staff DR No. 43

17 **II. RESPONSE TO STAFF WITNESS CLAIRE EUBANKS**

18 **Q. Have you had an opportunity to review the sections of the Rebuttal Testimony of Staff  
19 Witness Claire Eubanks, PE relating to the Guidehouse Report?**

20 A. Yes, I have.

21 **Q. Can you summarize her remarks?**

22 A. Ms. Eubanks questions several assumptions included in the Guidehouse Report  
23 (Schedule AP-2 to my Direct Testimony). Notably, Ms. Eubanks questions whether it is fair for

1 the report to assume that the transmission line will be operated bi-directionally. Ms. Eubanks also  
2 questions whether the Guidehouse Report properly accounts for Long-Range Transmission  
3 Planning (LRTP) projects in its calculations of benefits to MISO load resource zones. Ms. Eubanks  
4 also addresses questions regarding the economic retirement of coal-plants in Missouri, the ability  
5 of the Grain Belt Express Project to influence MISO auction prices, and the potential of VSC type  
6 HVDC assets to provide system restoration or black start services.

7 **Q. Do you agree with Ms. Eubank’s statement regarding overstating the value of the**  
8 **project with respect to bi-directional capability?**

9 A. No, it is not reasonable to discount or deny future potential benefits on the grounds  
10 that energy contracts do not now exist as it is difficult to secure commercial contracts to deliver or  
11 transport energy without entitlements including the approval of this Commission. The Guidehouse  
12 report was developed to estimate potential future benefits of the Project with two key assumptions:  
13 (1) the necessary interconnection agreements and other contracts are in place to enable the  
14 Project’s stated injection capacities at planned points of interconnection; and (2) incremental  
15 capital investments are made to enable future bi-directional HVDC operations. Allowances related  
16 to incremental capital additions to enable future flexibility related to system costs and reliability  
17 is a reasonable approach. For more information on Grain Belt Express’ plans for bidirectional  
18 flow, see the Section III of the Rebuttal Testimony of Aaron White and Section V of the Rebuttal  
19 Testimony of Carlos Rodriguez. The Guidehouse Report is written to estimate the future value of  
20 the Project to Missouri, and other states, assuming the full scope of the Project is approved as  
21 proposed. With these assumptions in place, the Guidehouse estimated benefits are reasonable and  
22 not overstated.

1 **Q. Ms. Eubank’s states project does not necessarily hedge against future capacity needs**  
2 **for Missouri because there is no requirement that utilities in Missouri procure future**  
3 **capacity from projects. Does this impact the value of the Project?**

4 A. Yes, conceivably Grain Belt Express is affected and could be more valuable in the  
5 future. Even though there is no requirement for utilities to procure future capacity from any  
6 particular project, once projects like Grain Belt Express have been constructed, utilities and ISO’s  
7 have always sought to extract maximum value from these, and in fact, all facilities to increase  
8 reliability and reduce costs.

9 In a similar way, the Rush Island coal plant referenced by Ms. Eubanks creates a stronger  
10 case for building the project as proposed. In October of 2022 FERC accepted the filing of the  
11 System Support Resource (SSR) agreement between MISO and Ameren Missouri. In the filing  
12 MISO indicated that the “. . . Rush Island SSR Agreement is a just and reasonable agreement to  
13 ensure transmission system reliability in the MISO region by maintaining the continued  
14 availability of Rush Island Unit Nos. 1 and 2. . .”<sup>1</sup> FERC’s acceptance of this filing supports the  
15 argument that planned and future retirement of legacy coal fired power stations put system  
16 reliability at risk and resources such as the Project provide needed import capacity to ensure  
17 reliability of the bulk electric system.

18 **Q. Ms. Eubanks questions the ability of the Project to lower MISO capacity auction**  
19 **prices due to the types of resources proposed to utilize the Grain Belt Express**  
20 **transmission path. How do you respond?**

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<sup>1</sup> Order Accepting Filings re : Midcontinent Independent System Operator, Inc, Docket No. ER22-2691, *available at* [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20221024-3065&optimized=false](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20221024-3065&optimized=false)

1           A.     The wind and solar resources in southern Kansas, based on annual observations,  
2 are robust. The contribution of these renewable resources from Kansas to the MISO capacity  
3 market, are expected to provide additional benefits which are difficult to access or reproduce  
4 within MISO. Regarding the question related to lowering auction prices, Ms. Eubanks incorrectly  
5 assumes resources from Kansas will be attributed at the MISO fleet wide average and not to their  
6 contribution during peak times. As such, the injection of these higher quality resources is expected  
7 to provide downward pressure on costs. Further, enhancements within Kansas such as energy  
8 storage can be enacted to increase the availability of these resources. Finally, the provision of  
9 power during the morning or afternoon ramp within MISO, to take advantage of the time zone  
10 differences, provides a level of coverage which addresses daily or seasonal peaks and will also  
11 have a beneficial effect on prices.

12 **Q.     Do you agree with Ms. Eubank’s statement that additional studies will be required**  
13 **for the VSCs to be designated as a black-start resource?**

14           A.     Yes. Please refer to Guidehouse’s response to Staff Data Request No. 0043,  
15 attached hereto as Schedule RB-1. In the response to this Data Request, we describe the processes  
16 and agreements necessary for the Project to provide the potential system restoration capabilities  
17 described in the Guidehouse Report.

18                           **III.     RESPONSE TO STAFF WITNESS SHAWN LANGE**

19 **Q.     Have you had an opportunity to review the sections of the Rebuttal Testimony of**  
20 **Staff Witness Shawn Lange, PE relating to the Guidehouse Report?**

21           A.     Yes, I have.

22 **Q.     Can you summarize his remarks?**



1           A.     Mr. Lange discusses the MISO LRTP process and a recent approval of the Tranche  
2 1 portfolio of projects which are intended to address economic and reliability needs for the MISO  
3 system. He provides analysis and commentary regarding the Tranche 1 portfolio and potentially  
4 overlapping benefits between the Project. Mr. Lange also discusses economic analysis performed  
5 by other Invenenergy consultants and outstanding requests for FERC technical conferences to discuss  
6 overlapping benefits of regional and interregional transmission planning processes.

7 **Q.     How do you respond?**

8           A.     Mr. Lange states that the assumptions made by Guidehouse overstate known  
9 impacts on capacity auction prices because current contracts do not interconnect into MISO. I  
10 would like to reiterate that the Guidehouse report utilizes several future state assumptions  
11 including the presumption that relevant commercial agreements are executed. Given the testimony  
12 of Mr. Sane in this docket, which indicates the existence of several Memorandums of  
13 Understanding (MOU) related to interest in securing transmission capacity from the project, this  
14 is a reasonable assumption to include in the Guidehouse report. Assuming the necessary contracts  
15 and interconnection agreements are executed, the PRA benefits described in the Guidehouse report  
16 are durable regardless of the LRTP Tranche 1 portfolio. As stated by Mr. Lange, when sufficient  
17 capacity is not offered at auction the clearing price will be equal to the Cost of New Entry (CONE);  
18 this is consistent with assumptions made in the Guidehouse report and occurred during the 2022-  
19 2023 MISO PRA. Figure 21 in Mr. Lange’s testimony illustrates that 2022-2023 PRA prices were  
20 \$233.78 higher in MISO Zones in the North, (Zones 1-7) and then they were in the South (Zones  
21 8-10) indicating more available capacity in the South and a shortage in the north. It is worth noting  
22 that none of the Tranche 1 projects in the figure provided in Mr. Lange’s testimony illustrate a new

1 path to connect low-cost resources in Zones 8-10 to higher cost Zones in MISO’s Northern region.  
2 Tranche 1 LRTP projects will strengthen connections between high priced Zones 1-7.

3 **Q. If the MISO LRTP Tranche 1 Portfolio is put into service as proposed, will the PRA**  
4 **savings estimated by Guidehouse be reduced or eliminated?**

5 A. Because the Tranche 1 Portfolio does not a provide a new transmission path  
6 between low-cost resources in MISO south (Zones 8-10) and high-cost northern zones (1-7) it is  
7 reasonable to project that PRA savings generated by the Project will be sustained regardless of the  
8 Tranche 1 Portfolio. While this cannot be confirmed definitively without performing detailed  
9 power flow and production cost analyses in which both the Grain Belt Express and Tranche 1  
10 projects are included, some of these studies have been performed by Invenergy Transmission and  
11 its consultants (ICF) and are discussed further in the Sane and Lange testimonies of this docket.  
12 The ICF studies indicate that modeling the Grain Belt Express project with the Tranche 1 Portfolio  
13 increases overall benefits to MISO customers. The Grain Belt Express project is providing an  
14 injection of incremental low-cost capacity that can participate in MISO capacity auctions which  
15 may be delivered to load serving entities through a transmission network enhanced by the Tranche  
16 1 Portfolio. Consistent with the ICF study results, the net impact to customers estimated by  
17 Guidehouse may be even greater with the Tranche 1 Portfolio in service because transmission  
18 congestion between MISO Zones 1-7 could be reduced, but this must be confirmed through further  
19 technical study.

20 **IV. CONCLUSION**

21 **Q. Does this conclude your testimony?**

22 A. Yes, it does.

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of the Application of Grain Belt )  
Express LLC for an Amendment to its Certificate )  
of Convenience and Necessity Authorizing it to )  
Construct, Own, Operate, Control, Manage, and ) File No. EA-2023-0017  
Maintain a High Voltage, Direct Current )  
Transmission Line and Associated Converter )  
Station )

**AFFIDAVIT OF ROBERT BAKER**

1. My name is Robert Baker, and I am a Director at Guidehouse, Inc. My business address is 100 King St W Suite 4950, Toronto, ON M5X 1B1, Canada.
2. I have read the above and foregoing Rebuttal Testimony and the statements contained therein are true and correct to the best of my information, knowledge, and belief.
3. Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

*Robert Baker*  
\_\_\_\_\_  
Robert Baker  
Director  
Guidehouse, Inc.

Date: May 12, 2023