

# Grain Belt Express Open Solicitation

## INFORMATION MEMORANDUM

MARCH 2023



**Grain Belt Express**  
*An Invenenergy Project*

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## DISCLAIMER

This Information Memorandum (“IM”) is intended solely to provide sophisticated parties with input that may be relevant to the Grain Belt Express Open Solicitation process, including the submission of an Expression of Interest. It does not, however, and should not be considered to, contain a complete statement of all the matters that may be material or relevant to an interested party before an Expression of Interest is submitted, and should not be considered or treated by an interested party as a substitute for further independent investigation.

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This IM may not be used for any other purpose than the evaluation of the opportunity to submit an Expression of Interest. Certain information (not disclosed in this IM) that will be provided in connection with the Grain Belt Express Open Solicitation process is confidential information subject to the terms of a non-disclosure agreement with Grain Belt Express LLC, and nothing contained in this IM amends or modifies the terms of such non-disclosure agreement. This IM does not constitute an offer and shall not form the basis of any contract or commitment. Nothing herein shall be construed as giving legal, financial, or other advice of any kind.

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<sup>1</sup> The reference to the regional regulatory regime includes but is not limited to policies and procedures implemented by the relevant regional transmission organizations (RTOs) and/or independent system operators (ISOs).

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# I. Executive Summary

Grain Belt Express (the “Project”) is a merchant transmission line proposed by Grain Belt Express LLC that will provide the capacity to deliver up to 5,000 MW, primarily from renewable energy generation facilities in Western Kansas, to load-serving entities and other offtakers in the Midwest and adjacent regions via an interconnection with Midcontinent Independent System Operator, Inc. (“MISO”), PJM Interconnection, L.L.C. (“PJM”), and Associated Electric Cooperative, Inc. (“AECI”). Grain Belt Express LLC is a wholly owned subsidiary of Invenergy Transmission LLC (“Invenergy Transmission”), which is a wholly owned subsidiary of Invenergy Renewables LLC (“Invenergy Renewables”).

The Project will enhance interregional transfer capabilities in two distinct phases. Phase 1 will allow for 2,500 MW of power to flow between southwestern Kansas (adjacent to SPP) and the MISO/AECI territories in northeastern Missouri. Phase 2 will add an additional 2,500 MW of transfer capability by extending the Project to PJM via an interconnection point near the Illinois-Indiana state line.

Grain Belt Express, which will enable access to high net capacity renewable resources, will yield considerable reliability, environmental, and economic benefits. Expansion of interregional transfer capability enhances reliability by connecting a diverse set of loads and supply resources, thereby enabling power to flow to where it is needed most. The Grain Belt Express will also help mitigate interregional transmission congestion, which represents a substantial cost to electric ratepayers and often leads to economically inefficient curtailment of zero-emission renewable resources.

Grain Belt Express expects to be operational in the first quarter of 2029.

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## OPEN SOLICITATION

Consistent with the requirements of the Federal Energy Regulatory Commission (“FERC”), Grain Belt Express LLC is undertaking this Open Solicitation process to allocate up to 800 MW transmission capacity on the Grain Belt Express transmission line. Grain Belt Express LLC has retained The Brattle Group as the Independent Solicitation Manager to conduct and oversee the Open Solicitation process.

On February 29, 2024, FERC granted in part Grain Belt Express LLC’s request for application for revised negotiated rate authority, renewing Grain Belt Express LLC’s authority, initially granted in 2014,<sup>2</sup> to allocate a share of the transmission rights at negotiated rates using an Open

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<sup>2</sup> *Grain Belt Express Clean Line LLC*, 147 FERC ¶ 61,098 (2014).

Solicitation, subject to demonstrating in a FERC compliance filing that the Open Solicitation has complied with FERC’s rules governing negotiated rate authority.<sup>3</sup>

Transmission rights offered under this Open Solicitation include only the capacity associated with Phase 1 along the path between the project’s western terminus in southwest Kansas and point of interconnection northeastern Missouri. Transmission rights are one way, point-to-point with capacity in this solicitation available from west to east (KS to MO).

Grain Belt Express LLC is commencing the Open Solicitation on March 12, 2024. Interested parties must submit an Expression of Interest (“EOI”) by 5 PM Eastern Time on April 12, 2024. Grain Belt Express LLC will finalize the list of parties that it will enter into bilateral negotiations with by April 26, 2024. The objective of the negotiation phase is to execute one or more transmission service agreements that target up to 800 MW of transmission capacity by May 31, 2024. Additional information can be found at the Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)).

For convenient reference, the key dates related to the Open Solicitation process are provided again in the following table.

Schedule for Open Solicitation Process	
Timeframe	Description
March 12, 2024	Open Solicitation Commences
April 12, 2024	Deadline for Potential Customers to Submit Expressions of Interest
April 26, 2024	Finalize List of Parties for Negotiations
May 31, 2024	Negotiation and Execution of Transmission Service Agreement(s)
June 30, 2024	Submit Section 205 Filing to FERC

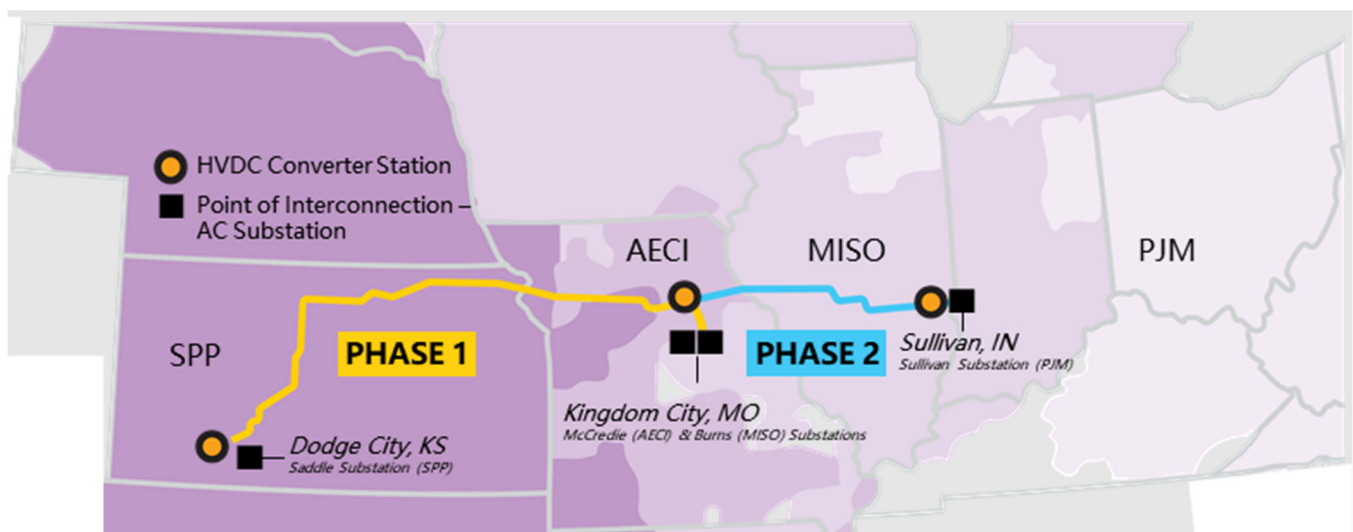
<sup>3</sup> Grain Belt Express LLC, 186 FERC ¶ 61,158 (2024).

## II. Project Overview

Grain Belt Express is a merchant transmission line proposed by Grain Belt Express LLC that will provide the capacity to deliver up to 5,000 MW, primarily from renewable energy generation facilities in Western Kansas, to load-serving entities and other off-takers in the Midwest and adjacent regions via an interconnection with Midcontinent Independent System Operator, Inc. (“MISO”), PJM Interconnection, L.L.C. (“PJM”), and Associated Electric Cooperative, Inc. (“AECI”). Grain Belt Express LLC is a wholly owned subsidiary of Invenergy Transmission LLC (“Invenergy Transmission”), which is a wholly owned subsidiary of Invenergy Renewables LLC (“Invenergy Renewables”).

Invenergy Transmission plans to develop this bi-directional Project in two phases. Phase 1 will be a transmission solution with the capacity to deliver up to 2,500 MW of energy, primarily from renewable energy sources, in southwest Kansas<sup>4</sup> to northeastern Missouri. Major Phase 1 project facilities consist of (i) HVDC voltage source converter stations; (ii) approximately 542 miles of overhead HVDC transmission line in a 600 kV bipolar configuration with dedicated metallic return conductor; (iii) AC switchyards built adjacent to the HVDC converter stations; and (iv) AC overhead transmission lines to connect the converter stations to portions of the SPP, MISO, and AECI managed electrical systems (referred to herein as balancing authority areas (“BAAs”)) in Kansas and Missouri.

FIGURE 1: PROJECT ROUTE MAP



<sup>4</sup> This area is within the geographic footprint of Southwest Power Pool, Inc. (“SPP”), but the generation facilities connecting to the Grain Belt Express transmission facilities will not necessarily be interconnected to the SPP transmission system.

Phase 1 will enable delivery of energy resources from southwest Kansas while enhancing the resilience for the SPP, MISO, and AECI BAAs. The Project will create a new export facility enabling energy resources, including abundant renewable resources in southwest Kansas, to serve load centers in other energy markets via interregional HVDC transmission. Through Grain Belt Express, interested parties can deliver energy resources that offer technological and geographic diversity to customers in interconnected markets.

By allowing for the potential of one BAA to import a large amount of power from another BAA, Grain Belt Express will bolster system reliability in the event that a weather event or other threat to system reliability causes generation supply in one BAA to diminish below needed levels.<sup>5</sup> This will also improve the ability of each of these BAAs to recover after a power failure, including following a weather event or other serious system disruption.

Phase 2 will allow the project to deliver an additional 2,500 MW and extend the project to a fourth BAA, PJM, through an interconnection point located near the Illinois-Indiana state line. By interconnecting PJM as well as SPP, MISO, and AECI, Phase 2 will further enhance the Project's resilience benefits, enabling potential resource sharing among all four BAAs.

Transmission rights offered under this Open Solicitation include only the capacity associated with Phase 1 along the path between the project's western terminus in southwest Kansas and point of interconnection northeastern Missouri. Transmission rights are one way, point-to-point with capacity in this solicitation available from west to east (KS to MO).

## III. Open Solicitation Overview

### A. Overview of Open Solicitation Process

As noted above, on February 29, 2024, FERC granted Grain Belt Express LLC's request for renewed authority to allocate transmission rights at negotiated rates using this Open Solicitation process, subject to FERC approval of a compliance filing that demonstrates that the Open Solicitation has complied with FERC's negotiated rate authority rules and precedent.

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<sup>5</sup> Report on Barriers and Opportunities for High Voltage Transmission, Prepared by the Staff of the Federal Energy Regulatory Commission, at 8 (June 2020), <https://www.congress.gov/116/meeting/house/111020/documents/HHRG-116-II06-20200922-SD003.pdf> ("The ability to share resources across regions, through use of the high voltage transmission system, provides important reliability and resilience benefits when the resources in one area are impacted due to an unexpected disruptive event."); id. at 10 ("HVDC lines between neighboring interconnections might help by providing frequency response support from other interconnections when one interconnection experiences a large loss of generation.... HVDC transmission projects can also provide a variety off system stability benefits.").

Grain Belt Express LLC has retained The Brattle Group (“Brattle”) as the Independent Solicitation Manager (“ISM”) to conduct and oversee the Open Solicitation process.

The Open Solicitation process will commence on March 12, 2024. Interested parties will be able to access the Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)) by that date. The website will contain additional information about the Project.

Parties interested in purchasing transmission capacity on the Project must submit an “Expression of Interest” (“EOI”) to Brattle no later than 5 PM Eastern Time on April 12, 2024. Directions for submitting the EOI can be found on the Grain Belt Express Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)).

The availability of transmission rights associated with Grain Belt Express are anticipated to commence at the time of the Project’s expected in-service date in the first quarter of 2029. Grain Belt Express LLC is targeting up to 800 MW of transmission rights in this Open Solicitation and will not consider negotiating with any party that does not express interest in at least 200 MW of capacity and for a term length of at least 20 years. Interested Bidders are responsible for sourcing generation for delivery across Grain Belt Express.

In this Open Solicitation, transmission rights will be available for flows from Kansas to Missouri. As part of their response, interested parties must specify whether they are interested in procuring rights to deliver energy to the Project’s interconnections with AECI and/or, MISO.

Grain Belt Express LLC requests that interested parties submit EOIs on or before April 12, 2024.

Any changes to the project or the status of the Open Solicitation process will be posted to the Open Solicitation website.

## B. Open Solicitation Schedule

The Open Solicitation process will be launched on March 12, 2024. As previously mentioned, interested participants may submit a completed EOI (available on the Open Solicitation website described below) by 5 PM Eastern Time on April 12, 2024. The EOI Form can either be sent via email to [ism-grainbeltexpress@brattle.com](mailto:ism-grainbeltexpress@brattle.com) or uploaded through the Bid Submission tab of the Grain Belt Express Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)).

After receiving EOIs, Grain Belt Express LLC will engage in negotiations with all, or a subset, of the interested parties based on the selection criteria described below. Grain Belt Express LLC will finalize the list of parties with which it will negotiate by April 26, 2024. The objective of the negotiation phase is to attempt to execute one or more transmission service agreements for all



of the Open Solicitation capacity by May 31, 2024. Grain Belt Express LLC reserves the right to terminate the Open Solicitation process or withdraw from negotiations at any time.

**TABLE 1**

<b>Schedule for Open Solicitation Process</b>	
<b>Timeframe</b>	<b>Description</b>
March 12, 2024	Open Solicitation Commences
April 12, 2024	Deadline for Potential Customers to Submit Expressions of Interest
April 26, 2024	Finalize List of Parties for Negotiations
May 31, 2024	Negotiation and Execution of Transmission Service Agreement(s)
June 30, 2024	Submit Section 205 Filing to FERC

## C. Selection Criteria

Grain Belt Express LLC will consider negotiating with only those parties interested in purchasing at least 200 MW of transmission capacity on the Grain Belt Express for a minimum of 20 years. After receiving the EOIs, Grain Belt Express LLC (with assistance from Brattle) will then evaluate potential negotiating parties based on the following criteria:

1. Indicative pricing;
2. Anticipated amount of reserved capacity;
3. Anticipated length of term;
4. Desired date for the commencement of transmission service;
5. Level of creditworthiness;
6. Financial strength; and
7. Development status of energy assets that may be relevant to the use of the transmission rights.

Interested parties must submit information related to these criteria on the EOI Form available on the Project Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)).

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### COMMUNICATIONS WITH INTERESTED PARTIES

In addition to the information currently posted on the Project Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)), additional information may be posted in subsequent updates.

Questions regarding the Open Solicitation process should be directed to Brattle through the “Ask the Manager” tab on the Project Open Solicitation website or directly via email at [ism-grainbeltexpress-os@brattle.com](mailto:ism-grainbeltexpress-os@brattle.com)

## D. Website Details

The Grain Belt Express Open Solicitation website ([www.os-grainbeltexpress.com](http://www.os-grainbeltexpress.com)) has been established to host materials related to this Open Solicitation process. The website features the following sections:

- Home: includes an overview of the Open Solicitation process from the Independent Solicitation Manager;
- How to Participate: outlines key steps for interested parties to participate in the Open Solicitation;
- Registration: interested parties must register by completing the registration form to receive email announcements regarding the Open Solicitation process;
- Bid Submission: interested parties must complete the Expression of Interest form to submit materials to the Independent Solicitation Manager;
- Calendar: contains a list of important dates related to the Open Solicitation process;
- Route Map: contains a route map of the Grain Belt Express (Phase I);
- Documents: contains links to important public documents relevant to the Open Solicitation process;
- Confidential: contains links to important confidential documents relevant to the Open Solicitation process; and,
- FAQ: contains answers to questions submitted to the Independent Solicitation Manager.

# IV. Potential Value Proposition

## A. Overview of Value Proposition

Holders of transmission rights associated with the Grain Belt Express will be able to use those rights to deliver energy from the project’s converter station in Kansas to the Midcontinent Independent System Operator (“MISO”) or Associated Electric Cooperative Incorporated (“AECI”) areas in Missouri, depending on the delivery point pertaining to the transmission right.

Under certain conditions, holders of transmission rights associated with Grain Belt Express also can offer capacity and renewable energy credits (“RECs”) into the relevant MISO markets.

Interested parties should conduct their own due diligence regarding applicable market rules, regulations, tariff provisions, and applicable transaction costs.

## B. Comparison of Recent PPA Values

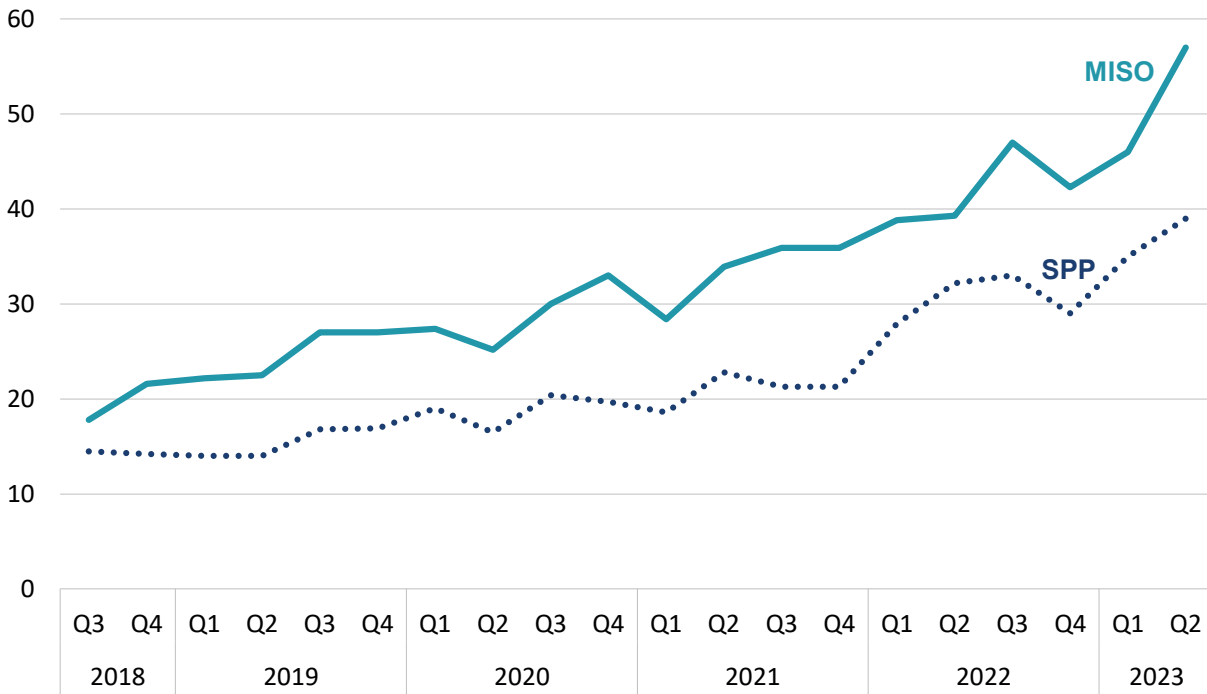
One primary indicator of the value of transmission rights on the Grain Belt Express pertains to regional differences in the value of power purchase agreements (“PPAs”) for renewable energy. Generally speaking, market participants perceive that renewables PPAs can command a higher value in MISO than in SPP, whether for wind or solar resources. As indicated in Figure 2 and Figure 3 below, this premium is substantial and has grown recently.

A recent Lawrence Berkeley National Laboratory (“LBNL”) report summarized data on wind PPA price offers, as collected by LevelTen Energy.<sup>6</sup> These market data indicate that the prices associated with wind PPA offers in MISO have exceeded prices for wind PPA offers in SPP, frequently by \$10-\$15 per MWh (see Figure 2 below). The most recent data, for Q2 2023, indicate that that premium has grown to \$18/MWh.

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<sup>6</sup> Wisser, Ryan, et al. Land-Based Wind Market Report: 2023 Edition. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA (United States), 2023.

**FIGURE 2: LEVELTEN WIND PPA PRICE INDEX  
(NOMINAL \$/MWH, 25<sup>TH</sup> PERCENTILE OF OFFERS)**



Source: Wisner, Ryan, et al. Land-Based Wind Market Report: 2023 Edition. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA (United States), 2023.

Data file available at [https://emp.lbl.gov/sites/default/files/2023\\_land\\_based\\_wind\\_market\\_report\\_final\\_public.xlsx](https://emp.lbl.gov/sites/default/files/2023_land_based_wind_market_report_final_public.xlsx)

Analysis by LevelTen Energy suggests that the recent increases in MISO wind prices in part stem from increased interconnection costs and delays in the interconnection process.<sup>7</sup> As of September 2023, there was a backlog of more than 240 GW of generation and storage in the interconnection queue, leading to considerable delays and uncertainty for new projects.<sup>8</sup>

Though MISO has since filed proposed interconnection queue reforms with FERC, delays in interconnection are likely to persist for some time and interconnection costs continue to

<sup>7</sup> LevelTen News, “After Soaring for Years, North America Solar PPA Prices Show Signs of Stabilization in Q2, According to LevelTen Energy’s PPA Price Index,” accessed January 4, 2024, available at: <https://www.leveltenenergy.com/post/2023q2-ppa-price-index>.

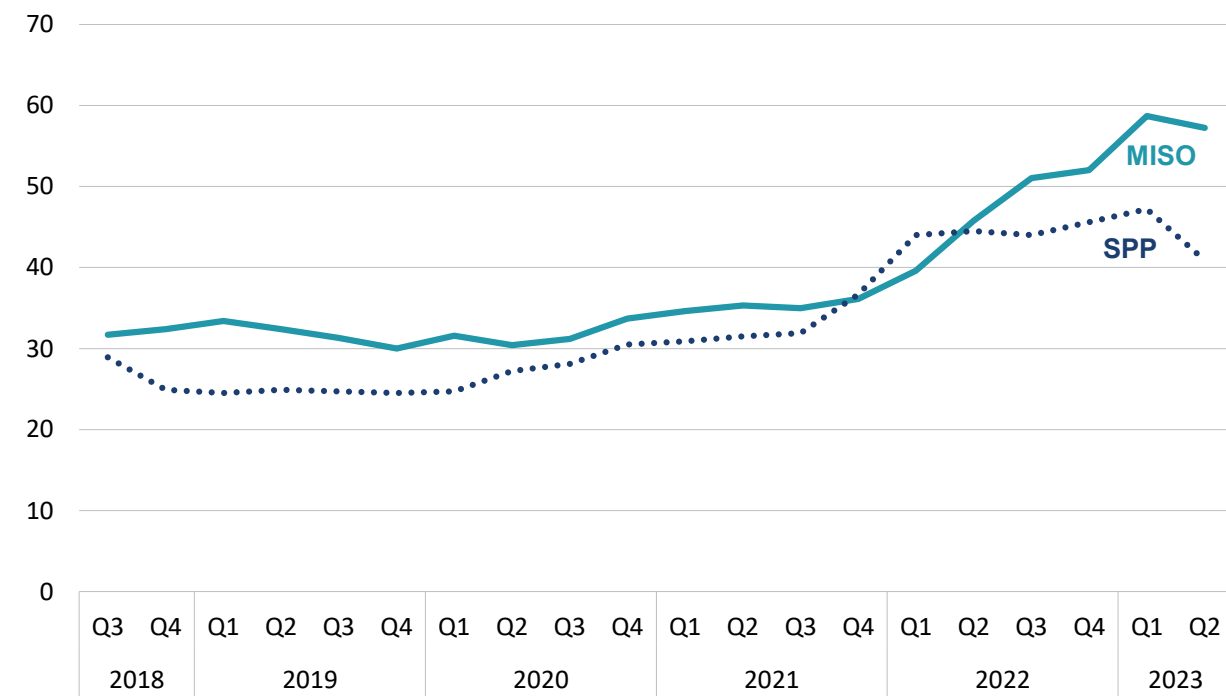
<sup>8</sup> MISO, “Long Term Resource Adequacy,” September 12, 2023, p. 5, available at: <https://cdn.misoenergy.org/20230912%20System%20Planning%20Committee%20of%20the%20BOD%20Item%20005%20Long%20Term%20Resource%20Adequacy630148.pdf>;

MISO, “Midcontinent Independent System Operator, Inc. Revisions to the Open Access Transmission, Energy and Operating Reserve Tariff Generator Interconnection Procedures Improvements Filing,” November 3, 2023, p. 4, available at: [https://cdn.misoenergy.org/2023-11-03\\_Docket%20No.%20ER24-340-000630771.pdf](https://cdn.misoenergy.org/2023-11-03_Docket%20No.%20ER24-340-000630771.pdf).

increase.<sup>9</sup> By obtaining Grain Belt Express transmission rights with a MISO delivery point, a Kansas-based generator connected directly to the Grain Belt Express may be able to avoid certain interconnection costs and delays that face other MISO generation suppliers, while benefitting from relatively favorable MISO PPA prices.

A second LBNL report summarized data on solar PPA price offers, also collected by LevelTen Energy.<sup>10</sup> Here, relative market conditions are similar, in that solar PPA offers in MISO have typically exceeded prices for solar PPA offers in SPP, with the premium widening to more than \$16/MWh in Q2 2023 (see Figure 3 below).

**FIGURE 3: LEVELTEN SOLAR PPA PRICE INDEX  
(NOMINAL \$/MWH, 25<sup>TH</sup> PERCENTILE OF OFFERS)**



Source: Bolinger, Mark, et al. Utility-Scale Solar: 2023 Edition. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA (United States), 2023.

Data file available at [https://emp.lbl.gov/sites/default/files/2023\\_utility-scale\\_solar\\_data\\_update.xlsx](https://emp.lbl.gov/sites/default/files/2023_utility-scale_solar_data_update.xlsx)

These differences are likely driven by a combination of demand factors and supply factors. With respect to supply factors, developers in SPP states benefit from a higher capacity factor for their renewable energy generation, which allows them to set a lower PPA price and still cover project development costs. The higher PPA prices in MISO also may be driven by generally

<sup>9</sup> MISO, “Midcontinent Independent System Operator, Inc. Revisions to the Open Access Transmission, Energy and Operating Reserve Tariff Generator Interconnection Procedures Improvements Filing,” November 3, 2023.

<sup>10</sup> Wisner, Ryan, et al. Land-Based Wind Market Report: 2023 Edition. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA (United States), 2023.

higher energy prices in MISO in recent years, as discussed in further detail below. Increased demand for renewables, driven in part by growth in decarbonization and clean energy goals, may also contribute to the price separation between markets; a recent MISO report indicates that most of the MISO footprint has a clean energy goal of 50% or higher.<sup>11</sup>

To the extent that renewables developers are able to procure a higher PPA price by selling to one or more buyers in MISO as opposed to SPP, owners of renewable generation located near the western terminus of the Grain Belt Express may be able to capture this interregional premium through the purchase of Grain Belt Express transmission rights.

## C. Incremental Energy Market Revenues

Alternatively, holders of transmission rights on the Grain Belt Express may be able to export energy from SPP to take advantage of higher-priced energy market opportunities in MISO that would not otherwise be possible. Invenenergy's preliminary engineering analysis indicates that SPP's available withdrawal capabilities would likely exceed the 800 MW being offered in this solicitation. Similarly, available injection capabilities at the Project's interconnection with MISO would likely exceed the 800 MW being offered in this solicitation.

Recent market conditions provide an example of the potential incremental energy value afforded by Grain Belt Express transmission rights. The average real-time ("RT") energy prices for nodes on either end of the Grain Belt Express are presented below for each hour of the day, covering the period from November 1, 2021 through October 31, 2023 (see Figure 4). On average, MISO prices exceeded SPP prices across all hours of the day, with the greatest price differentials typically occurring in the overnight hours.

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<sup>11</sup> Mid-Continent Independent System Operator, "MISO Futures Report Series 1A." November 1, 2023, pp. 11-12. Available at [https://cdn.misoenergy.org/Series1A\\_Futures\\_Report630735.pdf](https://cdn.misoenergy.org/Series1A_Futures_Report630735.pdf); last accessed December 12, 2023.

FIGURE 4: AVERAGE REAL-TIME ENERGY PRICES BY TIME OF DAY, NOV 2021 – OCT 2023<sup>12</sup>

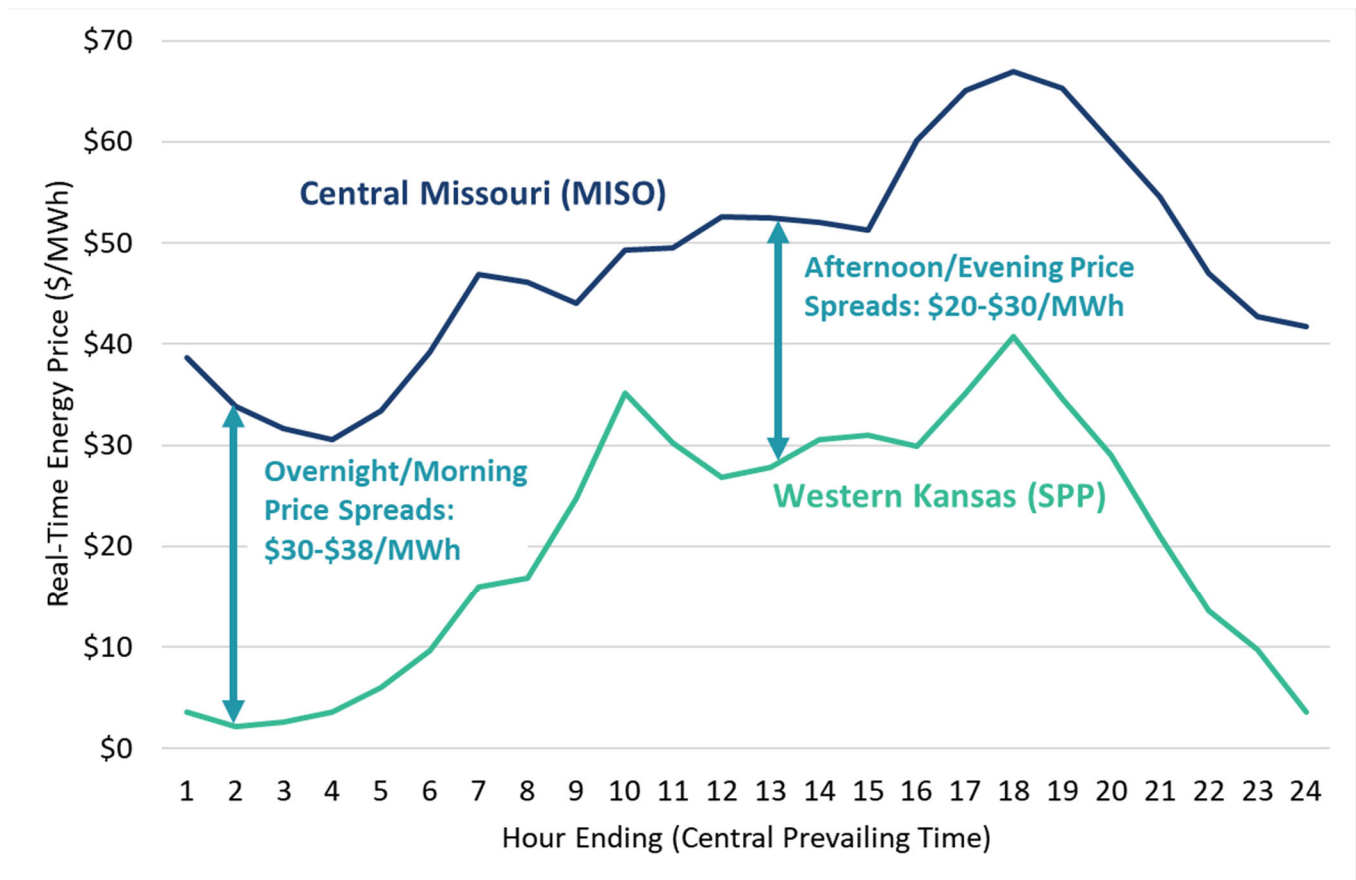
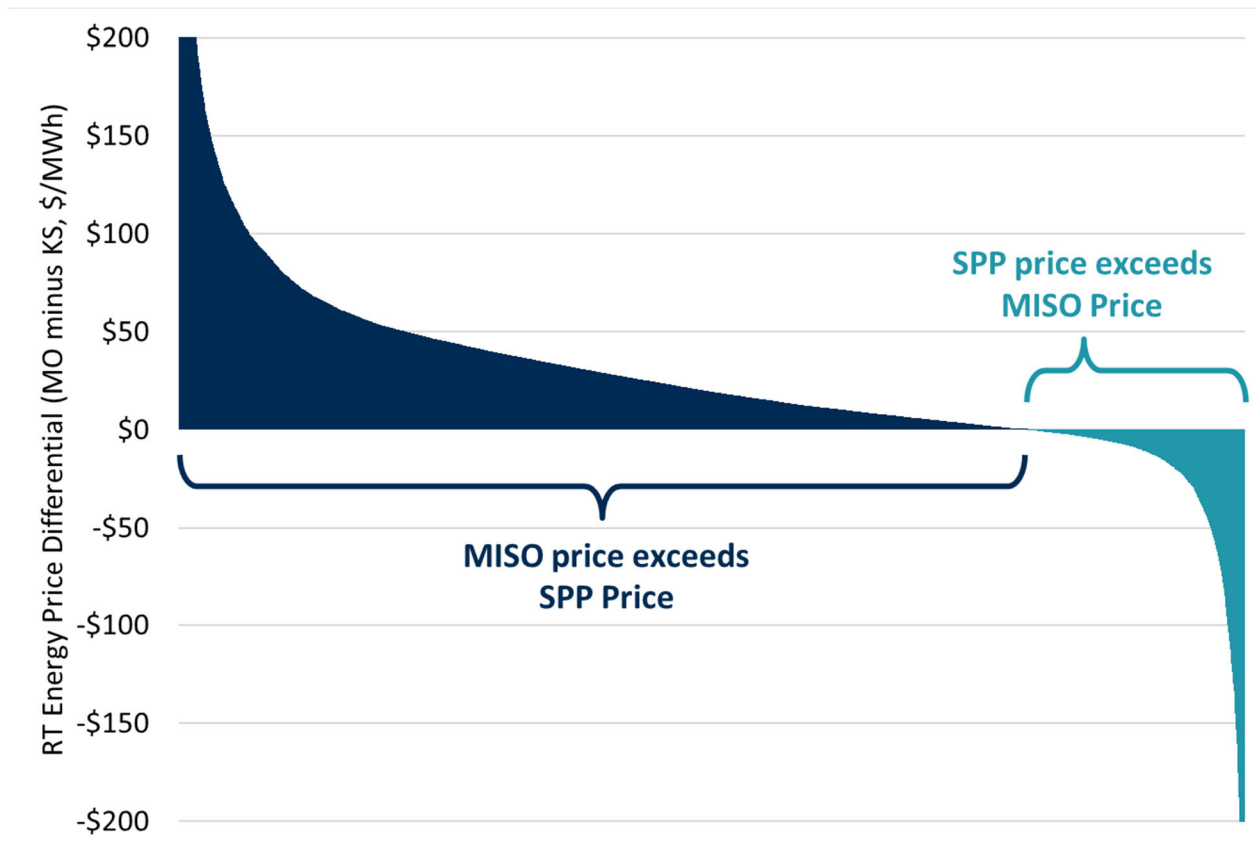


Figure 5 below presents a duration curve of RT energy price differentials over the period from November 1, 2021, through October 31, 2023. This figure indicates how many of the 17,520 hours in this time period had SPP RT energy prices exceeding the corresponding MISO RT energy prices, and vice versa, while the vertical axis denotes the magnitude of those differentials.<sup>13</sup> As shown in Figure 5, the relevant MISO price exceeded the relevant SPP price in roughly 80% of hours. In the remaining 20% of hours, the relevant SPP price exceeded the relevant MISO price.

<sup>12</sup> N.B., Central Missouri prices taken from the MISO CWLD.FULT node near Columbia, MO. Western Kansas prices taken from the SPP SECISADDLE7UNIRONSTAR\_WIND node near Dodge City, KS.

<sup>13</sup> The analysis presented in this section assumes that the relevant pricing node in SPP is SECISADDLE7UNIRONSTAR\_WIND and that the relevant pricing node in MISO is CWLD.FULTON.

FIGURE 5: REAL-TIME ENERGY PRICE DIFFERENTIAL DURATION CURVE, NOV 2021 – OCT 2023



The vertical axis is truncated in Figure 5, but it is worth noting that, for the period from November 1, 2021 through October 31, 2023, MISO RT prices (dark blue) exceeded SPP prices by more than \$200/MWh in 283 hours or 1.6% of total hours (and exceeded them by \$500/MWh in 22 hours). Based on past market performance, a large share of the potential arbitrage value is concentrated in a relatively small number of hours in which the absolute differentials are substantial.

The average additional revenue per MWh afforded by the option to export SPP energy into MISO during this timeframe was \$34.12/MWh or \$299,000/MW-year.<sup>14</sup> If a Kansas generator located near the Grain Belt Express were to use the transmission rights to sell all of its output exclusively in MISO, the additional value compared to selling all of its output in SPP would have been \$27.96/MWh or \$245,000/MW-yr.<sup>15</sup>

<sup>14</sup> Transactions to schedule energy deliveries between SPP and MISO are subject to the transmission service arrangements made by the holder of transmission rights pursuant to the SPP and MISO OATTs. All revenue figures contained in this information memorandum are indicative and subject to the risks associated with actual transactions and potential transaction costs.

<sup>15</sup> In this example, the \$299,000/MW-yr is partially offset due to the opportunity cost from not selling at the higher SPP price in those hours when the SPP price exceeds the MISO price.



As demonstrated above, transmission rights pertaining to the Grain Belt Express offer the opportunity for a renewables developer, for example, to use those rights to deliver their generation to MISO or AECI. In hours when delivery of its generation does not exhaust its rights on the transmission line, the generator may be able to leverage those rights for the types of energy market transactions discussed above as a source of additional value.<sup>16</sup>

While the information presented here provides an indication of potential additional energy market revenue afforded by the Grain Belt Express transmission rights based on past prices in MISO and SPP, potential respondents to this Open Solicitation are responsible for conducting their own due diligence with respect to assessing the future revenue they would expect from using transmission rights on the Grain Belt Express in either direction.

## D. Potential Capacity Market Opportunity

Pending certain qualification requirements, firm transmission rights on the Grain Belt Express may enable a Kansas generation owner to obtain MISO accredited capacity and offer the associated capacity credits of their resource (known as “Zonal Resource Credits” or “ZRCs”) into MISO’s Planning Resource Auction (“PRA”). Alternatively, the capacity credits can be sold to other MISO Market Participants via bilateral agreements.

In addition to having firm transmission rights for delivery into MISO, PRA participation would require the generator to take on a Day-Ahead must-offer requirement should those ZRCs be used to meet Resource Adequacy requirements, whether by clearing the auction or being submitted as a Fixed Resource Adequacy Plan (FRAP). The resource must be available if called upon in a MISO declared Emergency.<sup>17</sup> Other conditions must also be met for a resource to be allowed to participate in the MISO PRA.<sup>18</sup>

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<sup>16</sup> Transactions to schedule energy deliveries between SPP and MISO are subject to the transmission service arrangements made by the holder of transmission rights pursuant to the SPP and MISO OATTs. All revenue figures contained in this information memorandum are indicative and subject to the risks associated with actual transactions and potential transaction costs.

<sup>17</sup> See MISO [Rate Schedule 06 MISO-SPP JOA](#) Emergency Operating Procedures Section 8.1.

<sup>18</sup> See, for example, MISO, [Business Practices Manual No. 011](#), Section 4.2.3.

If a generator is connected directly to the Grain Belt Express converter station, it can deliver directly to MISO.<sup>19</sup> This resource likely would be subject to the same capacity accreditation parameters as internal MISO resources.<sup>20</sup>

The MISO PRA design assigns reliability and clearing requirements to ten Local Reliability Zones (“LRZs”) within MISO. Qualified capacity from an internal MISO resource may contribute to the zonal clearing requirements only in the zone in which that resource is physically located. These zonal restrictions create the opportunity for price separation across zones, and indeed recent years have seen significant locational variation in capacity market clearing prices.

Figure 6 below provides a map of the MISO LRZs, along with the 2023 results of the PRA for each zone. In addition, Table 2 provides the PRA clearing prices starting with the 2015-2016 Plan Year (“PY”) and ending with the 2022-2023 Plan Year. While this information provides an indication of past prices for MISO capacity resources, potential respondents to this Open Solicitation are responsible for conducting their own due diligence with respect to assessing the future capacity value and pricing of capacity over the term covered by any transmission rights they would obtain.

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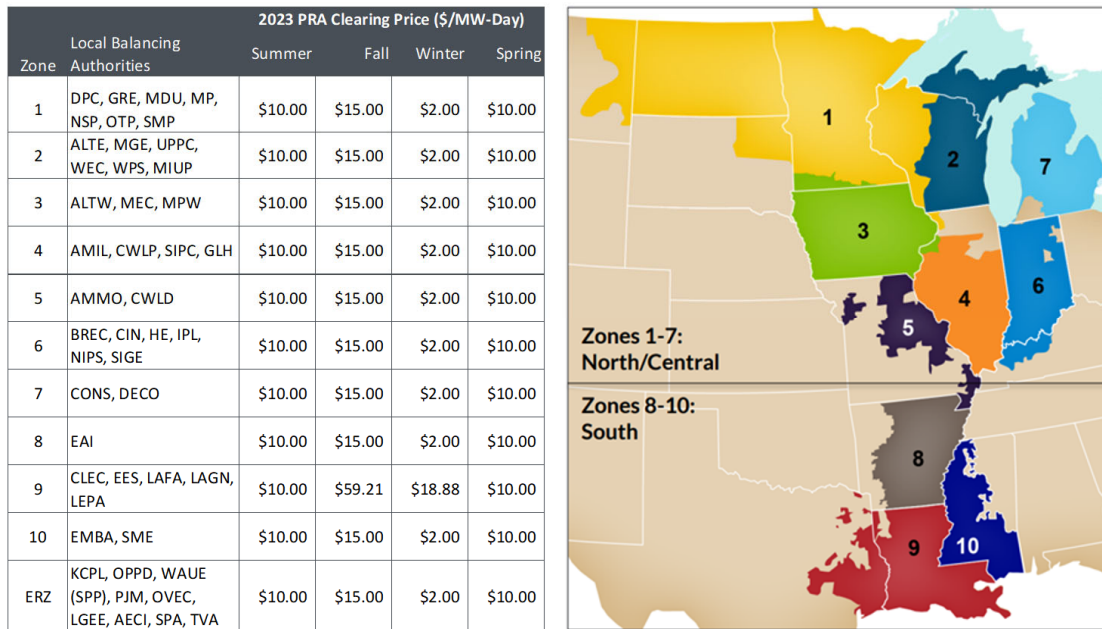
<sup>19</sup> As it would not be located in the SPP balancing area, it would avoid any risk of curtailment by SPP.

<sup>20</sup> MISO’s existing framework for accrediting wind and solar capacity resources is outlined in BPM-011 section 4.2.1.5, but MISO is in the process of implementing (pending FERC approval) a new accreditation framework known as Direct Loss-of-Load (DLOL). Information on DLOL can be found at:

MISO, [Resource Accreditation White Paper](#), May 2023; and MISO, [Market Redefinition: Accreditation Reform](#), October 4, 2023.

Preliminary solar DLOL results for the current fleet are available for download at: [https://cdn.misoenergy.org/20231004%20RASC%20Item%2005a%20PY23-24%20LOLE%20Study%20DLOL\\_v1.1%20-%20Solar630362.xlsx](https://cdn.misoenergy.org/20231004%20RASC%20Item%2005a%20PY23-24%20LOLE%20Study%20DLOL_v1.1%20-%20Solar630362.xlsx); showing accreditation rates of 36% for summer, 0% for winter, 28% for fall, and 15% for spring.

**FIGURE 6: MISO RESOURCE ADEQUACY ZONES AND 2023 PRA CLEARING PRICES**



**TABLE 2: MISO PRA CLEARING PRICES, 2015-2023**

PY	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	ERZs
2015-2016	\$3.48		\$150.00	\$3.48			\$3.29		N/A	N/A	
2016-2017	\$19.72	\$72.00					\$2.99		N/A		
2017-2018	\$1.50										N/A
2018-2019	\$1.00	\$10.00									N/A
2019-2020	\$2.99			\$24.30				\$2.99			
2020-2021	\$5.00			\$257.53				\$4.75	\$6.88	\$4.75	\$4.89-\$5.00
2021-2022	\$5.00			\$0.01				\$2.78-\$5.00			
2022-2023	\$236.66			\$2.88				\$133.70-236.66			
IMM Conduct Threshold	25.01	24.52	23.67	24.74	26.63	24.40	25.69	23.10	22.88	22.84	26.67
Cost of New Entry	250.05	245.18	236.66	247.40	266.27	243.95	256.90	230.99	228.82	228.44	266.68

- Auction Clearing Prices shown in \$/MW-Day
- Conduct Threshold is 10% of Cost of New Entry (CONE)

In 2018, FERC approved changes to MISO’s tariff that established a new framework for PRA participation from resources located outside of the MISO footprint.<sup>21</sup> In part, External resources located outside of the MISO BAA will be able to sell capacity credits to into MISO. If an external generation resource has firm transmission rights into MISO and is not curtailable when MISO is

<sup>21</sup> 165 FERC ¶ 61,067, Order Accepting Tariff Filing, October 31, 2018.

in emergency procedures, and if it meets other MISO requirements for PRA participation, it can offer capacity credits for the External Resource Zone (“ERZ”).

Resources in ERZs can sell capacity credits that count towards the MISO region-wide Reserve Requirement but cannot count towards Local Clearing Requirements. These ERZ capacity credits are priced according to the unconstrained clearing price of the sub-region (*i.e.*, MISO North/Central or MISO South) which borders the neighboring BA. This is a less favorable treatment than internal MISO resources receive because the Local Clearing Requirements impose a constraint that may lead to higher prices for local capacity credits.

Though there was explicit discussion of HVDC-connected resources (including specific reference to the Grain Belt Express) in the FERC proceeding, the 2018 filing and order declined to address how HVDC-connected resources fit into this framework. It may eventually be possible for resources directly connected to the Grain Belt Express to qualify as internal Zone 5 (Missouri) MISO resources, but at present this remains unknown.

While the information presented here provides an indication of potential capacity market revenue afforded by the Grain Belt Express transmission rights based on current MISO capacity market requirements and recent prices, potential respondents to this Open Solicitation are responsible for conducting their own due diligence with respect to assessing the future revenue they would expect from using transmission rights on the Grain Belt Express.

## E. Potential Renewable Energy Credit (“REC”) Market Opportunity

Under certain conditions, it may be possible for generation owners with transmission rights on the Grain Belt Express to sell RECs in MISO that are compliant with state renewable portfolio standards (“RPS”). A review of state RPS legislation indicates that Illinois and Wisconsin are two states where Grain Belt Express transmission rights may enable an otherwise ineligible Kansas generator to sell compliance RECs.

In Illinois, a 2021 update to the state utility codes created an exemption that would appear to extend RPS eligibility to renewable projects having firm HVDC transport to a converter station in Illinois or an adjacent state.<sup>22</sup> However, no projects have availed themselves of this exemption, and the requirements for selling RECs on this basis remain somewhat unclear.<sup>23</sup> The most

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<sup>22</sup> See Illinois Compiled Statutes, [\(20 ILCS 3855/\) Illinois Power Agency Act](#), Section 1-75 (c)(1)(I).

<sup>23</sup> See Illinois Power Agency, [2022 Long-Term Renewable Resources Procurement Plan](#), August 23, 2022, pp. 104-105.

recent available data indicates a range of \$4.37 to \$4.51/MWh for competitively procured Illinois compliance RECs.<sup>24</sup>

In Wisconsin, only renewable energy used to serve Wisconsin load may be eligible to meet the state's RPS.<sup>25</sup> This requirement would appear to imply a deliverability requirement, which Grain Belt Express firm transmission rights could facilitate. However, it also suggests that the RECs and energy may need to be sold as a bundled package in order for the RECs to qualify. The Public Service Commission of Wisconsin has the sole authority to certify renewable facilities and certify their RECs as Renewable Resource Credits (RRCs) to be used for compliance in the RPS.<sup>26</sup> Prices for competitively procured RRCs were not readily available. At present, the state RPS program appears to be over-subscribed, and the RPS requirement is not imminently expected to increase.<sup>27</sup>

Additionally, RECs may be sold through the voluntary REC markets, as voluntary demand for green power continues to grow.<sup>28</sup> Certain customers in MISO may be interested in purchasing voluntary RECs from renewable energy sources that are deliverable to their own load. Grain Belt Express transmission rights could allow Kansas-based renewable energy generators to qualify as providing RECs deliverable to MISO load.

## V. Description of Parties & Advisors

### A. Grain Belt Express

Grain Belt Express LLC is a wholly owned subsidiary of Invenergy Transmission LLC ("Invenergy Transmission"), which is a wholly owned subsidiary of Invenergy Renewables LLC ("Invenergy Renewables").

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<sup>24</sup> See Illinois Power Agency, [Annual Report: Fiscal Year 2022](#), February 15, 2023, pp. 37-39.

<sup>25</sup> Public Service Commission of Wisconsin, [2021 Renewable Portfolio Standard Report](#), June 7, 2022, p. A-4, citing Wisconsin Statute § 196.378(1)(o)1. and 2.

<sup>26</sup> *Id.*, p. A-3.

<sup>27</sup> *Id.*, p. 4.

<sup>28</sup> See, e.g., Sumner, Jenny, Eric O'Shaughnessy, Sushmita Jena, and Jesse Carey. 2023. Status and Trends in the U.S. Voluntary Green Power Market (2021 Data). Golden, CO: National Renewable Energy Laboratory. NREL/TP-7A40-86162. <https://www.nrel.gov/docs/fy23osti/86162.pdf>.

## B. Invenergy Transmission

Invenergy Transmission is the owner of Grain Belt Express. Invenergy Transmission is a U.S. company that together with its affiliates has over 20 years of experience solving energy challenges for our customers and communities. Invenergy Transmission is building transmission infrastructure to meet critical energy needs across America – from communities and customers, to grid operators and governments. Invenergy Transmission has end-to-end involvement in infrastructure projects that will deliver cost-competitive, reliable energy for consumers, generate good-paying local jobs, reduce carbon emissions, and strengthen national security.

## C. The Brattle Group

The Brattle Group, Inc. provides consulting and expert testimony in economics, finance, and regulation to corporations, law firms, and governments around the world. Through its energy practice, Brattle has provided assistance to electric utilities, transmission companies, independent power producers, municipal utilities and cooperatives, power purchasers, and regulators such as the FERC and state public utility commissions. Brattle has extensive experience with auction design and management issues and providing strategic bidding advice to bidders in the electric power and telecommunications sectors. More generally, Brattle has analyzed energy and capacity pricing issues in MISO, SPP, and other regional markets in a variety of different contexts.

As the Independent Solicitation Manager for the Open Solicitation process, Brattle will, among other responsibilities, manage communications with parties involved in the solicitation process, administer the procurement website, respond to bidder questions, and handle expressions of interest. Further information is available at [www.brattle.com](http://www.brattle.com).

## D. Latham & Watkins LLP

Latham & Watkins LLP (“Latham & Watkins”) is a global law firm that includes offices in Washington, D.C., New York, London, Los Angeles, and Chicago. Latham & Watkins has a leading energy transactional, litigation and regulatory practice that advises clients on the full spectrum of energy issues. Latham & Watkins attorneys in its global Power Industry Group help clients achieve their objectives and provide pragmatic advice to clients on all stages of their business cycle. Latham & Watkins regularly represents independent power producers, transmission and distribution utilities, and equity and debt investors on a variety of matters, including: mergers and acquisitions; project finance transactions; purchase and sale agreements, commodity sales and other structured transactions; controversy matters (including

administrative litigation); compliance and enforcement matters; and project siting and permitting. More information can be found at: [www.lw.com](http://www.lw.com).

Latham & Watkins is acting as federal energy regulatory counsel to Grain Belt Express LLC for this solicitation process.

# Appendix A

Additional Information	
Description	Website
Project Website	<a href="http://www.grainbeltexpress.com">www.grainbeltexpress.com</a>
Open Solicitation Website	<a href="http://www.os-grainbeltexpress.com">www.os-grainbeltexpress.com</a>
Project Resources, Including Regulatory Documents	<a href="http://www.grainbeltexpress.com/resources-news/">www.grainbeltexpress.com/resources-news/</a>
The Brattle Group	<a href="http://www.brattle.com">www.brattle.com</a>