

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

In the Matter of the Application of Grain Belt )  
Express Clean Line LLC for Certificate of )  
Convenience and Necessity Authorizing it to )  
Construct, Own, Operate, Control, Manage )  
And Maintain a High Voltage, Direct Current ) Case No. EA-2014-0207  
Transmission Line and an Associated Converter )  
Station Providing an Interconnection on the )  
Maywood-Montgomery 345 kV transmission line. )

**ROCKIES EXPRESS PIPELINE LLC'S POST-HEARING BRIEF**

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COMES NOW Rockies Express Pipeline LLC, and for its Post-Hearing Brief states as follows:

**I. INTRODUCTION**

Grain Belt Express Clean Line LLC (“Grain Belt”) applied to the Commission (the “Application”) for a certificate of convenience and necessity (“CCN”) to construct and operate a 600kV high voltage direct current (HVDC) transmission line through Missouri. One of the issues for the Commission’s consideration of the Application is: “if the Commission grants the CCN, what conditions, if any, should the Commission impose?” (*List of Issues and Witnesses*, October 27, 2014 [EFIS Item 259]). It is Rockies Express Pipeline (“REX”)’s position that if the Commission grants the CCN, the Commission should impose the conditions recommended by its expert, Robert F. Allen.

Grain Belt proposes to run parallel to and to cross REX’s 42-inch diameter, high pressure, natural gas pipeline for a significant portion of Grain Belt’s HVDC route through Missouri—coming as close as 100 feet from REX’s pipeline and crossing it as many as twenty-seven times. Neither Grain Belt’s Application nor the pre-filed direct testimony of any of its witnesses alerted the Commission to the significant potential risks that Grain Belt’s HVDC

transmission line poses to REX and other nearby underground utilities. REX intervened in this action to raise concerns regarding the potential effects of Grain Belt's proposed HVDC line on REX's pipeline. In subsequent prefiled testimony, in discovery and at the evidentiary hearing, however, Grain Belt acknowledged that its proposed HVDC line poses significant potential risks to REX's pipeline [and potentially other nearby underground utilities]. The parties disagree, however, on the conditions that should be imposed on Grain Belt in order to ensure that its HVDC does not negatively affect REX's pipeline.

The PSC has the authority to grant a CCN to an electrical corporation to construct and operate an electric plant when it has determined after due hearing that the construction is "necessary or convenient for the public service." § 393.170.3 RSMo. "The safety and adequacy of facilities are proper criteria in evaluating necessity and convenience[.]" *State ex rel. Intercon Gas, Inc. v. Public Service Com.*, 848 S.W.2d 593, 597 (Mo. App. W.D. 1993). The Commission, by its order granting the requested CCN may, "impose such condition or conditions as it may deem reasonable and necessary." § 393.170.3 RSMo. Where a utility proposes to place its facilities in such close proximity to another utility that it may negatively affect the existing utility's operations, "it is for the Commission to determine, in the first instance, whether or not the proposed electrical line is a public necessity, and if so, whether it could, at reasonable expense, be constructed in such manner and at such distance...as not to injuriously affect the [existing utility's] service." *Public Service Commission v. Kansas City Power & Light Company*, 31 S.W.2d 67, 71 (Mo. 1930)(emphasis added). When proximity is a concern, the Commission can grant the requested certificate on the condition that the proposed facilities be constructed, operated and maintained in "an adequate and safe manner so as not to reasonably interfere with the service furnished by any other public utility." *Id.*

## **II. THE WITNESSES**

### **Dr. Anthony Wayne Galli**

Dr. Galli gave testimony on behalf of Grain Belt. He is an electrical engineer with 15 years' experience in the electric transmission industry, ranging from power system planning and operations to regulatory matters and project development. (Ex. 111, p. 2, l. 1-9 (Galli Direct)). Upon review of REX's expert Robert F. Allen's concerns about HVDC lines interacting with pipelines, Dr. Galli admitted that pipeline coating damage, pipeline corrosion, loss of cathodic protection, and damage to corrosion control and monitoring equipment were appropriate issues to study whenever a new piece of infrastructure parallels a gas pipeline. (Ex. 113, p. 9, l. 12-18 (Galli Surrebuttal)). Dr. Galli responded to the recommendations made by Mr. Allen, accepting three of them, but either partially or totally rejecting six of them. (*Id.*, p. 10, l. 1 - p. 14, l. 7). In general, Dr. Galli is critical of Mr. Allen's recommendations because Mr. Allen was unable to cite to industry standards, best practices or technical studies to support his recommendations. (*See, e.g.* Ex. 113, p. 11, l. 17-20). Dr. Galli, however, is not a pipeline engineer nor is he an expert in pipeline corrosion or crossings of pipelines. (Tr. Vol. 12, p. 481, l. 19-24). Dr. Galli is not a member of the National Association of Corrosion Engineers. (Tr. Vol. 12, p. 481, l. 25 – p. 482, l. 1-5). Further, Dr. Galli himself is not aware of any study in the public domain, or of any private study, addressing the impacts of 600kV transmission line on a parallel 42-inch diameter natural gas pipeline. (Tr. Vol. 12, p. 498, l. 4-13; p. 647, l. 2-14). Dr. Galli also admitted that there *are no* guidelines or industry standards that address the interactions between HVDC lines and underground pipelines. (Tr. Vol. 12 p. 500, l. 6-17).

### **Timothy B. Gaul**

Mr. Gaul gave testimony on behalf of Grain Belt. Mr. Gaul has a bachelor's and a master's degree in science, and is an environmental scientist by planning and trade. (Ex. 104, p.

1, l. 11; p. 2, l. 1-9 (Gaul Direct)). Mr. Gaul sponsored the Routing Study under which Grain Belt developed its proposed route for its HVDC line. (*Id.* p. 1, l. 19-23; p. 3, l. 1-13). Mr. Gaul responded to REX's recommendation that the HVDC line maintain a distance of at least 1,000 feet from REX's pipeline. In general, Mr. Gaul testified that requiring the 1,000 foot separation distance would limit the environmental benefits of having the HVDC line parallel the pipeline. (Ex. 105, p. 2, l. 14 - p. 3, l. 4 (Gaul Surrebuttal)). Mr. Gaul admitted, however, that while the routing study took into consideration the environmental impacts of Grain Belt's proposed route, it did not specifically address whether it was safe for the HVDC line to parallel REX's existing pipeline. (Tr. Vol. 14, p. 1004, l. 10 - p. 1005, l. 15).

**Robert R. Leonberger**

Mr. Leonberger testified on behalf of Staff of the Commission. Mr. Leonberger has a bachelor's degree in architectural engineering, has completed DOT courses regarding safety standards for pipelines, is a former member of the National Association of Corrosion Engineers (NACE) and of the American Society of Mechanical Engineers-Gas Piping and Technical Committee (ASME-GPTC), is a current member and past Chairman of the National Association of Pipeline Safety Representatives (NAPSR) and is a current member of the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Pipeline Safety. (Ex. 205, p. 1, l. 19-20; p. 2, l. 19 - p. 3, l. 2 (Leonberger Rebuttal)). Mr. Leonberger testified that Staff has concerns about the effect of the HVDC line on underground utilities. (Tr. Vol. 17, p. 1702, l. 25 - p. 1703, l. 6.). Mr. Leonberger read the recommendations of Mr. Allen and had no disagreement with the recommendations. (*Id.* p. 1705, l. 4-19.)

**Robert F. Allen**

Mr. Allen testified on behalf of REX. Mr. Allen is a pipeline engineer with a bachelor's degree in electrical engineering and a master's of business administration. He has worked in the

power and oil refining industries for almost 25 years, has expertise in pipeline cathodic protection, corrosion control and electrical interference, is a member of and is certified by NACE as a cathodic protection specialist and a senior corrosion technologist, is a member of the Institute of Electrical & Electronic Engineers (IEEE), the American Society of Mechanical Engineers (ASME) and the Instrument Society of America (ISA). (Ex. 625, p. 1, l. 6 - p.2, l. 4; Schedule RFA-1 (Allen Rebuttal)). After a review of Grain Belt's Application, Mr. Allen formed the opinion that Grain Belt's HVDC system must be constructed, monitored and operated in specific ways so as to mitigate specific threats to the safe operation and integrity of REX's pipeline that can arise during both normal and abnormal operation of the HVDC line and that can reduce the pipeline operating efficiency, necessitate costly and disruptive repairs, and even cause the pipeline to rupture, including: pipeline coating damage, pipeline corrosion, loss of cathodic protection, damage to corrosion control equipment and damage to corrosion monitoring equipment. (*Id.* p. 3, l. 11 - p. 4, l. 3). Mr. Allen admitted he could not identify specific published studies, industry reports or best practices to support some of his recommendations, but clarified that this is because industry awareness and reporting is limited by the relatively small number of co-located pipelines and HVDC systems and any existing studies are likely to be proprietary or confidential to either the HVDC operator or the pipeline operator. (Ex. 113, Schedule AWG-11, *Intervenor Rockies Express Pipeline LLC's Responses to Grain Belt Express Clean Line LLC's First Set of Data Requests Response to Request #3*).

### **III. REX'S RECOMMENDATIONS**

In an attempt to identify and plan to mitigate potential concerns, REX's expert witness, Robert F. Allen, made nine separate recommendations. (*See* Ex. 625 ). Grain Belt accepted three of the recommendations, without qualification:

- Grain Belt agrees to conduct a DC interference analysis to determine the mitigation measures necessary. (Tr. Vol. 12, p. 507, l. 8-13; Ex. No. 113, p. 10, l. 11-17; *See also* Ex. 625, p. 10, l. 1-17 "*Recommendation No. 2*").

- Grain Belt agrees to confirm all data or assumptions regarding REX’s pipeline before engaging in the DC interference analysis. (Tr. Vol. 12, p. 507, l. 19-22; Ex.113, p. 10, l. 18 - p. 11, l. 1; *See also* Ex. 625, p. 10, l. 18 – p. 11, l. 11, “*Recommendation No. 3*”).
- Grain Belt agrees to conduct a DC interference analysis with respect to the converter stations. (Ex.113, p. 12, l. 1-7; *See also* Ex. 625, p. 14, l. 10 – p. 15, l. 2, “*Recommendation No. 9*”).

Although in its Opening Statement Grain Belt stated that it agreed to study five of the recommendations, it did not accept the following recommendations made by Mr. Allen on behalf of REX:

- REX recommended that the HVDC line cross REX’s pipeline at 90 degree angles. (Ex. 625, p. 11, l. 15 – p. 12, l. 2 “*Recommendation No. 4*”). REX’s expert explained that this recommendation was made in order to ensure that the towers are located at the furthest distance from the pipeline to reduce any effects to the pipeline if there were to be a fault condition at either of the towers at a crossing. (Ex. 113, Schedule AWG-11, *Intervenor Rockies Express Pipeline LLC’s Responses to Grain Belt Express Clean Line LLC’s First Set of Data Requests Response to Request #5*). Grain Belt disagreed with this recommendation “as presented,” not on any specific factual or technical basis or for any countervailing safety reason, but on the basis that Mr. Allen could not present industry standards, technical studies or best practices to support it. (Ex.113, p. 11, l. 2-13). Grain Belt’s own expert admitted, however, that there *are no* industry standards regarding the angles for crossings. (Tr. Vol. 12, p. 510, l. 4-12). Although Grain Belt acknowledged that the best practice is to “coordinate with the affected utilities” (Tr. Vol. 12, p. 511, l. 23-24), it would only agree to the recommendation, “when engineering, routing and cost constraints allow, as reasonably determined by Grain Belt.” (Ex. 113, p. 11, l. 9-13).



- REX recommended that at crossings, Grain Belt not be permitted to construct towers closer than 300 feet from REX’s pipeline. (Ex. 625, p. 12, l. 3-11, “*Recommendation No. 5*”). REX’s expert explained that keeping the towers at least 300 feet away is desirable because during a fault condition, fault current can flow down the towers closest to where the fault occurs and into the earth to REX’s pipeline. So, assuming a typical line span of 600 feet, this would place the pipeline mid-span and as far as possible from the towers closest to the crossing point. (*Id.*) Grain Belt did not agree to this recommendation, again, not on any factual or technical basis or for any countervailing safety reason, but solely because Mr. Allen could not present industry standards, technical studies or best practices to support it. (Ex. 113, p. 11, l. 14 - p. 12, l. 4). Grain Belt testified that it would ensure appropriate mitigation steps were taken, but did not identify what mitigation measures would be taken. (Tr. Vol. 12, p. 512, l. 21-23).
- As to grounding the towers nearest the pipeline crossings, REX recommended that Grain Belt be required to locate any ground rods or other methods of grounding towers on the side of the tower farthest from the pipeline, and specifically, that counterpoise methods of grounding not be permitted. (Ex. 625, p. 12, l. 12 – p. 13, l. 9 “*Recommendation No. 6*”). REX’s expert explained that the farther away the tower grounding system is from the pipeline, the less the possible DC interference effects will be on the pipeline. (*Id.* p. 13). Staff’s expert Mr. Leonberger highlighted this concern, as well, “[tower ground footings] could cause stray current to be put in the ground that could affect the metallic facilities [located] in the ground.” (Tr. Vol. 17, p. 1704, l. 12-17). Mr. Leonberger explained to the Commission that stray current entering the ground can have effects on a pipeline as serious as causing pipeline corrosion and disabling its cathodic protection systems. (*Id.* p. 1704, l. 18 – p. 1705, l. 3). Still, Grain Belt did not accept this recommendation, and

Mr. Galli testified that there are “a lot of factors that impact where current will flow in the earth.” (Tr. Vol. 12, p. 513, l. 18-19). Although Grain Belt objected to this recommendation as, “imposing specific engineering restrictions before the issues are actually understood in detail” it did not argue that the recommendation was in any way unsafe, ineffective, unwise, etc.

- REX recommended Grain Belt install a DC voltage monitoring system at each crossing of the HVDC line and REX’s pipeline. (Ex. 625, p. 13, l. 10-23, “*Recommendation No. 7*”). REX made this recommendation because crossings of its pipeline raise specific monitoring concerns, since a fault occurring at a tower nearest a crossing can cause stray current to travel down a tower into the earth and onto the pipeline. (*Id.*) Grain Belt simply responded by stating the recommendation was “unacceptable as proposed” because “the best engineering decisions can be made after the conclusion of the applicable studies.” (Ex. 113, p. 13, l. 3-10). During cross-examination, Mr. Galli explained that Grain Belt didn’t “necessarily disagree that there might be a need for it, but again, you know, we need to work together and study these things as a collaborative effort.” (Tr. Vol. 12, p. 514, l. 9-12).
- REX recommended that Grain Belt be required to immediately notify REX if and when a fault occurs anywhere on the HVDC line and to disclose the approximate location the magnitude and duration of the fault current situation, and the time when the system returned to normal operation. (Ex. 625, p. 14, l. 1-9 “*Recommendation No. 8*”). REX’s expert explained that REX needs to be able to review data to determine whether the fault condition had any adverse effect on the pipeline system. (*Id.*) Dr. Galli disagreed with REX’s recommendation because it would impose a lot of “encumbrances” on Grain Belt where “there’s an awful lot of different types of faults that could occur.” (Tr. Vol. 12, p.

514, l. 13 – p. 515, l. 15). Since Grain Belt’s expert Dr. Galli is not a pipeline engineer or an expert in pipeline corrosion issues, it is difficult to understand how he would know what types of faults might or might not affect the pipeline. Grain Belt did agree that notification should occur in some circumstances (Tr. Vol. 12, p. 515, l. 16-20), but made no attempt to define or narrow what terms it would find acceptable.

One recommendation of REX was rejected without qualification. REX recommended that ideally where the HVDC line parallels REX’s pipeline, it should be located 1,000 feet or more from the pipeline. (Ex. 625, p. 9, l. 8-20, “*Recommendation No. 1*”). Grain Belt rejected this recommendation as “not a common industry practice, not a good routing practice, and unnecessary from a safety perspective.” (Ex.113, p. 10, l. 1-10). As to routing, Grain Belt’s expert Mr. Gaul testified that routing is focused on mitigating environmental impacts, and admitted that it is not focused on whether the proposed parallel HVDC route is safe for a pipeline. (See Ex. 105, p. 2, l. 14 - p. 3, l. 4; Tr. Vol. 14, p. 1004 l. 10 - p. 1005, l. 15). In contrast, Mr. Allen explained that while there was no industry best practice identifying *specific* separation distances between pipelines and HVDC lines, the current "industry practice" is to recommend that the separation distance between pipelines and HVDC circuits at crossings be as great as possible. (Ex. 113, Schedule AWG-11, *Intervenor Rockies Express Pipeline LLC’s Responses to Grain Belt Express Clean Line LLC’s First Set of Data Requests Response to Request #4*). Though critical of REX, Grain Belt admits it has no study or work papers stating that 1,000 feet is not necessary. (Tr. Vol. 12, p. 501, l. 21-22). Dr. Galli testified that a safe distance can be achieved with appropriate mitigation measures. (Tr. Vol. 12, p. 505, l. 5-7). Again, Grain Belt makes no attempt to identify or explain what mitigation measures will ensure safety and did not recommend a particular distance between the HVDC line and REX’s pipeline.

Since Grain Belt has requested the CCN, the burden of proof is on *Grain Belt* to establish what is required to protect the integrity and safety of REX's existing pipeline, *before* the Commission issues it the requested CCN. Despite that burden, it was REX, not Grain Belt, who brought the issue to the Commission, and REX, not Grain Belt, who proposed specific recommendations to keep the pipeline safe from the potential negative effects that Grain Belt's own expert acknowledged: pipeline coating damage, pipeline corrosion, loss of cathodic protection, and damage to corrosion control and monitoring equipment. Notably, Grain Belt did not present any evidence that REX's specific recommendations were unnecessary or unsafe for REX's pipeline or for Grain Belt's HVDC line. At best, Grain Belt's responses to REX and Grain Belt's testimony imply, but do not prove, that REX's recommendations are excessive.

While nominally recognizing the validity of REX's concerns, Grain Belt has failed to identify any specific monitoring or mitigation measures it is willing to take to address REX's concerns. Instead, Grain Belt has stated that it is willing to conduct necessary testing and to implement the measures indicated by the tests. This is cold comfort as well as insufficient, since Grain Belt has failed to provide any specific information as to how or when these studies will be conducted, and how REX's concerns will be addressed and protected.

Given the unique nature of this proposed project, the admitted absence of industry standards or guidelines, the serious potential effects to REX's pipeline, and in the absence of contrary evidence, for the protection of REX's pipeline the Commission should impose the recommendations of REX's expert Robert F. Allen as specified in his Rebuttal Testimony, as a condition to the granting of a certificate of convenience and necessity to Grain Belt.

#### **IV. CONCLUSION**

As a condition to the grant of a CCN to Grain Belt, REX requests that the Commission impose all the recommendations of REX's expert Robert F. Allen.

Respectfully submitted:

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that the foregoing Rockies Express Pipeline LLC's Post-Hearing Brief was served via electronic mail (e-mail) on this 8<sup>th</sup> day of December, 2014 on counsel for all parties of record.

**/s/ Colly J. Durley**

Colly J. Durley