

**Exhibit No. \_\_\_\_\_**  
**Issues: Agricultural Impacts**  
**Witness: James L. Arndt**  
**Type: Surrebuttal Testimony**  
**Sponsoring Party: Grain Belt Express Clean Line LLC**  
**Case No.: EA-2016-0358**  
**Date of Testimony: February 21, 2017**

**SURREBUTTAL TESTIMONY OF**

**JAMES L. ARNDT, Ph.D.**

**ON BEHALF OF**

**GRAIN BELT EXPRESS CLEAN LINE LLC**

**February 21, 2017**

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1           **I. WITNESS INTRODUCTION AND PURPOSE OF TESTIMONY**

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

3   A. My name James L. Arndt. I am a Senior Project Manager at Merjent, Inc. (“Merjent”).  
4       My business address is 800 Washington Avenue North, Suite 315, Minneapolis, MN  
5       55401.

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

7   A. Yes, I have previously submitted direct testimony on August 29, 2016.

8   **Q. What is the subject matter of your surrebuttal testimony?**

9   A. I am providing this testimony to respond to certain issues presented in the rebuttal  
10       testimony of Missouri Landowners Alliance (“MLA”) witness Dale Pence, Show-Me  
11       Concerned Landowners witnesses Donald Shaw, John Turner, and Charles Kruse,  
12       Matthew and Christina Reichart’s witness Jack Garvin, and witness Charles Henke on  
13       behalf of Charles and Robyn Henke regarding the agricultural impact of the construction  
14       and operation of the Grain Belt Express transmission project (“Project”).

15           **II. RESPONSE TO REBUTTAL TESTIMONY OF DALE PENCE**

16   **Q. What are the issues that Mr. Pence raises regarding potential impacts of the Grain  
17       Belt Express Project on aerial agriculture in Missouri?**

18   A. Mr. Pence’s issues fall into three categories:

- 19       1. Configuration of the high voltage transmission lines (“HVTL”) can affect the  
20         efficiency of aerial spraying, increasing aerial application operational cost;
- 21       2. Decreasing spray application efficiency or preventing spray application  
22         completely in the affected portions of fields that contain HVTL wires results in

1 reduced yield and/or increased production costs, reducing grower net incomes;  
2 and

3 3. Increasing the risk to the aerial applicator.

4 **Q. Are these issues considered by Grain Belt Express Project as it microsites individual**  
5 **fields and farming operations?**

6 A. Yes. All three categories are considerations for the Project depending on the  
7 configuration and visibility of the lines and towers in relationship to the specific setting  
8 of the field, the crop and crop condition, weather conditions, and time of year. Most of  
9 the issues raised by Mr. Pence were addressed in my direct testimony at page 27 lines 21-  
10 23, page 28, line 1-23, and page 29, 1-22. None of this testimony was mentioned by Mr.  
11 Pence.

12 **Q. Does Grain Belt Express have any established policies or protocols related to**  
13 **avoidance, minimization, and mitigation of impacts to agriculture operations and**  
14 **landowners?**

15 A. Yes. Two documents are applicable, the Agricultural Impact Mitigation Policy (“AIM  
16 Policy”) and the Missouri Agricultural Impact Mitigation Protocol (“MO Ag Protocol”)  
17 that were attached to my direct testimony as Schedules JA-3 and JA-2, respectively. Both  
18 of these documents address concerns regarding aerial application. The AIM Policy  
19 emphasizes a commitment to consider potential impacts to aerial application when  
20 making routing adjustments and negotiating easements.

21 **Q. What specific protocols has Grain Belt Express developed to deal with aerial**  
22 **agriculture?**

1 A. Grain Belt Express will coordinate with landowners during routing to identify routes that  
2 may avoid and minimize impacts to agricultural operations, and include the following  
3 Construction Standards and Policies:

4 1. MO Ag Protocol Section 1. Landowner Tenant Coordination. Prior to construction,  
5 Grain Belt Express will coordinate with the Landowner and Tenant to identify the  
6 types of crops grown or livestock raised on the property, as well as identification and  
7 location of any agricultural infrastructure that may be located on the property and be  
8 potentially impacted by the Project.

9 2. MO Ag Protocol Section 4.A. Support Structure Type and Placement. The use of  
10 guy wires on Croplands will be avoided to the extent practicable. If guy wires are  
11 required, they will be marked with highly visible guards. A concerted effort will be  
12 made to place guy wires and their anchors out of Croplands, placing them instead  
13 along existing division lines (e.g., property lines, section, quarter, and half section  
14 lines, field edges, and/or fence lines) and on land not used for Croplands.

15 3. MO Ag Protocol Section 4.B. Support Structure Type and Placement. Grain Belt  
16 Express will discuss structure placement issues with Landowners. To the extent  
17 reasonably practicable, support structures will be spaced in such a manner as to  
18 minimize their interference with Cropland.

19 4. MO Ag Protocol Section 4.C. Support Structure Type and Placement. Grain Belt  
20 Express will provide the Global Positioning System (“GPS”) coordinates of the  
21 Project support structure locations, including guy wire anchors, to all Landowners or  
22 Tenants.

1 **Q. Mr. Pence indicated that chemicals could be ground-applied to areas where aerial**  
2 **applications are temporarily or permanently precluded, but that certain situations**  
3 **such as tall crops and wet conditions may prevent ground application. Do you**  
4 **agree?**

5 A. My agreement is conditional. There may be situations where ground applications may be  
6 temporarily precluded by wetness or crop conditions, but they may be resumed when  
7 conditions improve. The ground-based application of agricultural chemicals by high  
8 ground clearance sprayers is commonly used by growers that are not actively using aerial  
9 spraying.

10 **Q. If conditions dictate that inefficiencies and loss of aerial applications reduce crop**  
11 **yields or increase costs, does Grain Belt Express have protocols in place to**  
12 **compensate the landowner?**

13 A. Yes. It is incorrect to assume that lowered yields would inevitably represent a loss of  
14 farm income. First, in most cases, landowners can develop an application plan using  
15 ground based application equipment, such as high clearance spray vehicles, to cover areas  
16 for which aerial application is temporarily or permanently precluded. Second, crop yield  
17 losses due to the configuration of structures and transmission lines can be recovered from  
18 Grain Belt Express. Referring to Deann Lanz’s testimony starting on page 7. Line 19-23  
19 and page 8 Line 1-4:

20 “Grain Belt Express will pay landowners for any agricultural-related  
21 impact (“Agricultural Impact Payment”) resulting from the construction,  
22 maintenance or operation of the Project, regardless of when they occur and  
23 without any cap on the amount of such damages. For example, if the

1 landowner experiences a loss in crop yields that is attributed to the project,  
2 then Grain Belt Express will pay the value of such loss in yield for so long  
3 as such losses occur. In other words, the intent is that the landowner be  
4 made whole for any damages or losses that occur as a result of the Project  
5 for so long as the Project is in operation.”

6 Payment for such damages are addressed in the Damages Calculation Sheet  
7 described in the Transmission Line Easement Agreement attached as Schedule DKL-4 to  
8 Ms. Lanz’s testimony.

9 **Q. Can you summarize how Grain Belt Express has addressed issues relating to aerial**  
10 **agriculture, including the aerial application of herbicides, fungicides, pesticides and**  
11 **fertilizers that have been raised by Mr. Pence?**

12 A. Yes. Mr. Pence’s concerns involve location of wires and structures resulting in  
13 inefficient aerial spray application, potential increases in applicator costs that would be  
14 transferred to the grower, and inevitable loss of farm income due to increased costs and  
15 reduced yields. Mr. Pence’s concerns are mitigated by the following practices:

- 16 • Grain Belt Express has committed to collaborating with landowners to site structure  
17 locations to avoid, minimize, and mitigate impacts to their agricultural practices. In  
18 many cases, we anticipate that minor adjustments to the structure locations can place  
19 structures and transmission lines in locations that avoid or minimize impacts to aerial  
20 spraying of agricultural chemicals.
- 21 • Grain Belt Express has committed to affected landowners that they will be made  
22 whole for any damages or losses that occur as a result of the Project for so long as the

1 Project is in operation. A process for the calculation of agricultural damages has been  
2 provided and is addressed in the Easement Agreement.

3 **III. RESPONSE TO REBUTTAL TESTIMONY OF JACK GARVIN**

4 **Q. What are the concerns stated in Mr. Garvin’s Testimony?**

5 A. Mr. Garvin has agricultural and construction-related concerns that include the following:

6 1. Mr. Garvin is concerned that the proposed Project crossing of Brush Creek may result  
7 in damage to the riparian zone, causing soil erosion and sediment loading to the  
8 creek.

9 2. Portions of the property that may be affected by construction would be subject to soil  
10 compaction.

11 3. Though not formally registered as an Organic Farm under the National Organic  
12 Program, Mr. Garvin produces “organic” fruits and vegetables for his family, and is  
13 concerned that there is a potential for herbicides used for right-of-way maintenance  
14 contaminating garden plots, Brush Creek, ponds, and other waterways.

15 4. Mr. Garvin is concerned that there is a possibility of product spills such as fuel and/or  
16 oil contaminating land and water.

17 **Q. What policies and commitments would Grain Belt Express follow to address Mr.  
18 Garvin’s concerns?**

19 A. As prescribed in the AIM Policy and Mo Ag Protocol, Grain Belt Express has a  
20 commitment to consult with landowners to avoid, minimize, and mitigate impacts to the  
21 extent practicable as discussed in my direct testimony at page 11, lines 11-17. Mr.  
22 Garvin himself points out in his rebuttal testimony at pages 6-7 that Grain Belt Express  
23 representatives met with him to discuss routing concerns, which resulted in relocating the



1 Proposed Route to minimize impacts to his property. This commitment to coordinate with  
2 landowners also extends to easement negotiations with Mr. Garvin. Grain Belt Express  
3 will work with Mr. Garvin on structure placement to minimize impacts to riparian areas,  
4 ponds, and other areas, and would restore areas affected by construction and operations.

5 **Q. What protections are in place to ensure that construction-related activities do not**  
6 **result in erosion of and/or damage to the riparian zone adjacent to Brush Creek?**

7 A. Right-of-way clearing must be performed to ensure proper clearances of conductors from  
8 vegetation including trees and brush, safe operation and safe access for construction, line  
9 inspection and maintenance operations. Initial clearing will include the removal of  
10 woody vegetation from the full width of the right-of-way. Any marketable timber that is  
11 cleared from the right-of-way and access roads would belong to Mr. Garvin, and would  
12 be stacked at the edge of the right-of-way or another agreed-upon location. The cleared  
13 and other areas within the construction right-of-way that would be affected by  
14 construction are disturbed areas from which erosion is to be minimized according to the  
15 conditions of the Project Storm Water Pollution and Prevention Plan (“SWPPP”) that  
16 implements the National Pollution Discharge Elimination System (“NPDES”).

17 **Q. Please describe how the SWPPP and NPDES relate to the Grain Belt Express**  
18 **Project and its construction.**

19 A. The SWPPP and the NPDES and their role in preventing erosion are covered in my direct  
20 testimony at page 24, lines 14-23, page 25, lines 1-22, and page 26, lines 1-10. The  
21 NPDES permit and associated SWPPP are authorized by the Missouri Department of  
22 Natural Resources under a Land Disturbance Permit (“LDP”). Grain Belt Express will  
23 develop the Project SWPPP for all potentially disturbed sites along the Project, including

1 cleared areas. The SWPPP will provide specific information on site characteristics (e.g.  
2 size, configuration, soils, slope degree and length, vegetative cover, etc.) and the suite of  
3 best management practices (“BMP”) selected to control erosion, including installation  
4 specifics. It will also provide information on compliance inspection. The mandated  
5 implementation of the SWPPP within areas proposed for construction will ensure that  
6 erosion along the route has been avoided, minimized, and mitigated to the extent  
7 practicable. Finally, the SWPPP will require regular inspections, with additional  
8 inspections after significant rain events to ensure that the prescribed erosion control  
9 BMPs are operational and effective.

10 **Q. What protections are in place to ensure that construction-related soil compaction is**  
11 **avoided, minimized, or mitigated?**

12 A. Stumps and root systems would be left in place in forested areas, protecting the soil from  
13 excessive compaction. Avoidance, minimization, and mitigation of soil compaction,  
14 rutting, and soil mixing resulting from construction in open areas (e.g. fields and  
15 pastureland) and agricultural land are discussed in my direct testimony at page 20, lines  
16 18-23; pages 21 and 22, inclusive; and page 23, lines 1-17. Restoration of soils in the  
17 event compaction and rutting takes place is also addressed in the MO Ag Protocol  
18 Section 8.

19 Compaction avoidance and minimization procedures include, but are not limited  
20 to defining travel corridors to reduce the area traversed by equipment, utilizing mats for  
21 construction equipment, requiring the use of low ground pressure tire or tracked  
22 equipment, and limiting construction during wet weather. When soil compaction is  
23 observed, the degree of compaction would be evaluated by comparing on versus off right-

1 of-way soil density using a cone penetrometer. Remediation efforts for compacted soils  
2 may include decompaction or deep tillage as necessary. Rutted land may require  
3 recontouring, liming, tillage fertilization, or the use of other soil amendments. Organic  
4 soil fertilizers and amendments are an option at the direction of the landowner and as a  
5 condition of the Mo Ag Protocol.

6 **Q. What protections are in place to ensure that landowner-approved methods for**  
7 **vegetation control and fertilization are used during construction, restoration, and**  
8 **maintenance?**

9 A. The use of synthetic herbicides, pesticides, and fertilizers is not mandatory for any part of  
10 the Grain Belt Express construction right-of-way or permanent easement. Restoration of  
11 disturbed land can be accomplished with landowner-approved seed mixes, fertilizers, and  
12 herbicide/pesticides at the direction of the landowner. Merjent restoration specialists  
13 have experience permitting linear projects through formally recognized Organic Farms  
14 that are certified under the National Organic Program without loss of certification by  
15 using construction, restoration, and maintenance procedures that are consistent with the  
16 growers Organic System Plan. Grain Belt Express' commitment to growers concerned  
17 about contamination with unapproved pesticides, herbicides, and fertilizers is provided in  
18 the AIM Policy in the "Specialty Crops and Organic Farms" section.

19 Also, as described in the Construction Plan (included as Schedule TFS-4 to  
20 Thomas F. Shiflett's Direct Testimony), Grain Belt Express will implement a Vegetation  
21 Management Program incorporating principles of Integrated Vegetation Management  
22 (IVM), which when implemented will promote and manage sustainable vegetation

1 communities within the ROW, and specifically the vegetation community adjacent to  
2 Brush Creek.

3 **Q. The Project is anticipated to cross numerous waterways. What protections are in**  
4 **place to ensure that construction-related impacts do not result in fuel/oil**  
5 **contamination of waterways and wetlands?**

6 A. Protections that address fuel and oil spills are provided in a Spill Prevention Control and  
7 Countermeasures Plan (“SPCC Plan”). Grain Belt Express will develop a SPCC plan that  
8 is consistent with Federal Regulations under 40 CFR 112 administered by the Region 7 of  
9 the EPA. Potential sources of construction related spills include machinery and  
10 equipment failure, fuel handling, transfer accidents, and storage tank leaks. Any spill is a  
11 concern, but rapid clean-up is essential if there is the potential for contamination of a  
12 waterway or waterbody. SPCC plans have specific contents that are modified to suit  
13 project conditions. Plan components may include but are not limited to:

- 14 1. Designating a trained Spill Coordinator familiar with implementing and coordinating  
15 spill prevention, containment, and clean-up protocols, and reporting procedures.
- 16 2. Training employees who handle fuels and other regulated substances to prevent spills  
17 and to quickly and effectively contain and clean up spills that may occur.
- 18 3. Training Environmental Inspectors to ensure that all hazardous containment  
19 procedures are being followed, including storage, proper transfer and refueling  
20 protocols, and that no refueling, fuel storage, or equipment parking is permitted  
21 within a specific distance of a waterbody.
- 22 4. Making sure that all necessary tools, material, and manpower are on site and available  
23 to stop the spill, and initiate immediate clean-up response.

1 The most important consideration for preventing spill contamination of waterbodies and  
2 wetlands is to ensure that fuel, lubricants, and vehicles are not stored near the sensitive  
3 waterbody, and that all equipment is properly maintained and free of lubricant leaks.

4 **IV. RESPONSE TO REBUTTAL TESTIMONY OF DONALD SHAW**

5 **Q. What is the subject of Mr. Shaw's Testimony?**

6 A. Mr. Shaw is a retired executive formerly with Central Electric Power Cooperative and  
7 has a background in electrical engineering. Mr. Shaw provided rebuttal testimony on the  
8 need for the Grain Belt Express Project.

9 **Q. Did Mr. Shaw provide testimony regarding climate change relative to the need for**  
10 **the Project?**

11 A. Yes.

12 **Q. What background did Mr. Shaw provide to show credibility to address climate**  
13 **change issues?**

14 A. Mr. Shaw has attended several seminars that included climate change presentations and  
15 discussions. He indicated that he has had one-on-one discussions with climate experts  
16 from Arizona State University and the University of Missouri, and that he had done  
17 independent research and made climate change presentations.

18 **Q. What background do you have to address Mr. Shaw's rebuttal testimony on climate**  
19 **change?**

20 A. Mr. Shaw provides alleged scientific data and technical references on climate change to  
21 support his conclusion that there is no justification for the Project based on climate data.  
22 Notably, however, Grain Bet Express does not propose the Project is justified based on  
23 climate change concerns. My background includes the experience and education to

1 address the data, references and conclusions made by Mr. Shaw regarding climate  
2 change. I have a Ph.D. in soil science, with coursework in climatology and  
3 microclimatology. I have over 40 publications, including 15 peer-reviewed publications  
4 in scientific journals and a book chapter. I have been a peer reviewer for the highly  
5 regarded scientific journals Wetlands, Soil Survey Horizons, Soil Science Society of  
6 American Journal, the Journal of Hydrology, and the National Science Foundation. Like  
7 Mr. Shaw, I have an interest in climate change and have attended conferences where  
8 specialists have discussed the impacts of climate change on the economy, society, and  
9 natural ecosystems.

10 **Q. Can you provide an example?**

11 A. Yes. As a member of the Minnesota Plant Society, I attended the 2016 Minnesota Native  
12 Plant Society meetings and attended a presentation by Dr. Lee Froelich, Research  
13 Associate and Director, Center for Forest Ecology, University of Minnesota dealing with  
14 impacts of climate change on the past, current, and projected ecological features of  
15 Minnesota's Boundary Waters Wilderness.

16 **Q. Do you have any comments on Mr. Shaw's background relative to providing expert  
17 testimony on climate change?**

18 A. Mr. Shaw has not provided any technical background to substantively comment on  
19 climate change. He has not indicated how many seminars he attended that included  
20 climate change presentations or discussion, or who sponsored the seminars. He has not  
21 provided the titles of the presentations, or the names of the speakers. He indicated that he  
22 has spoken to experts in climate at Arizona State University and the University of  
23 Missouri, but has not indicated who the experts were or their departmental affiliation, or

1 provided their statements. He has indicated that he has made climate change  
2 presentations, but has not provided the presentations.

3 **Q. What is included in Schedules DWS-1 and DWS-2?**

4 A. Schedules DWS-1 and DWS-2 are taken from the web site of the Global Warming  
5 Petition Project (Oregon Petition Project) (<http://www.petitionproject.org/index.php> ).  
6 The Oregon Petition Project was started in 1997 and is sponsored by the Oregon Institute  
7 of Science and Medicine. The project solicits degreed individuals to sign a petition  
8 stating the following:

9 “We urge the United States government to reject the global warming  
10 agreement that was written in Kyoto, Japan in December, 1997, and any  
11 other similar proposals. The proposed limits on greenhouse gases would  
12 harm the environment, hinder the advance of science and technology, and  
13 damage the health and welfare of mankind.

14 There is no convincing scientific evidence that human release of  
15 carbon dioxide, methane, or other greenhouse gases is causing or will, in  
16 the foreseeable future, cause catastrophic heating of the Earth’s  
17 atmosphere and disruption of the Earth’s climate. Moreover, there is  
18 substantial scientific evidence that increases in atmospheric carbon  
19 dioxide produce many beneficial effects upon the natural plant and animal  
20 environments of the Earth.”

21 Schedule DWS-1 is a pdf printout of a portion of the website, and Schedule  
22 DWS-2 is an alleged peer reviewed review article written by Arthur B Robinson  
23 (President of the Oregon Institute of Science and Medicine), his son Noah E. Robinson,

1 and Willie Soon. The article is written in the format of the Proceedings of the National  
2 Academy of Sciences, but was published in the Journal of American Physicians and  
3 Surgeons (2007, issue 12, pages 70-90).

4 **Q. Can you comment on Schedules DWS-1 AND DWS-2?**

5 A. The Oregon Petition has been criticized by reputable climate scientists and review  
6 sources. Claiming over 31,478 degreed signatories, an insignificant number (<0.5%) are  
7 potentially categorized as climate scientists. The list has been criticized for its lack of  
8 verification, with pranksters successfully submitting the names of Charles Darwin, a  
9 member of the Spice Girls and characters from Star Wars, and getting them briefly  
10 included on the list.

11 Regarding Schedule DWS-2, the National Academy of Science (“NAS”) printed a  
12 Statement in 1998 signed by the National Academy of Sciences Council disavowing the  
13 Global Change Petition (Schedule DWS-1), and the journal article provided as Schedule  
14 DWS-2.<sup>1</sup> The NAS statement is provided as **Schedule JLA-6** attached to this surrebuttal  
15 testimony. Appropriate quotes are provided below.

16 “The Council of the NAS is concerned about the confusion caused by a  
17 petition being circulated via a letter from a former president of this  
18 Academy. This petition criticizes the science underlying the Kyoto treaty  
19 on carbon dioxide emissions (the Kyoto Protocol to the Framework  
20 Convention on Climate Change), and it asks scientists to recommend  
21 rejection of this treaty by the U.S. Senate. The petition was mailed with an  
22 op-ed article from The Wall Street Journal and a manuscript in a format

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<sup>1</sup> <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=s04201998>



1 that is nearly identical to that of scientific articles published in the  
2 Proceedings of the National Academy of Sciences. The NAS Council  
3 would like to make it clear that this petition has nothing to do with the  
4 National Academy of Sciences and that the manuscript was not published  
5 in the Proceedings of the National Academy of Sciences or in any other  
6 peer-reviewed journal.”

7 **Q. Please describe Schedule DWS-3?**

8 A. Schedule DWS-3 provides brief summary data from the research of Dr. Roy Spencer, a  
9 Climate scientist with the University of Alabama in Huntsville. Dr. Spencer has  
10 published extensively on climate modeling, and suggests that global warming is mostly  
11 due to natural inherent variability, and the climate insensitive to humanity’s greenhouse  
12 gas emissions. His research is commonly cited by people and organization that disavow  
13 climate change.

14 **Q. Can you comment on Schedule DWS-3?**

15 A. DWS-3 provides excerpts from Dr. Spencer’s research that are controversial and that are  
16 not generally supported by the scientific community. Ninety-seven percent of climate  
17 scientists agree that climate-warming trends over the past century are very likely due to  
18 human activities, and most of the leading scientific organizations worldwide have issued  
19 public statements endorsing this position.<sup>2</sup> In contrast to DWS-3, actual data provided in  
20 the climate record shows the magnitude of climate change based on current data<sup>3</sup>, and

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<sup>2</sup> <http://climate.nasa.gov/evidence/>

<sup>3</sup> <http://climate.nasa.gov/scientific-consensus/>

1 suggests that the rise in temperature is related to man-induced increases in CO<sub>2</sub>.<sup>4</sup> The  
2 National Academy of Sciences and the United Kingdom Royal Society released a  
3 statement in 2014 announcing a joint publication (Climate Change Evidence and Causes)  
4 that explains the clear evidence that humans are causing the climate to change, and that  
5 addresses a variety of other key questions commonly asked about climate change  
6 science.<sup>5</sup> The press release is provided as **Schedule JLA-7** attached to this rebuttal  
7 testimony.

8 **Q. Do you have an opinion regarding climate change?**

9 A. As a natural resources scientist, based on the preponderance of the scientific evidence, I  
10 agree with the vast majority of climate scientists and scientific research indicating that  
11 climate change is occurring and is causing significant changes to the earth climate. It is  
12 my opinion that, based again on the preponderance of the evidence, increased levels of  
13 greenhouse gases including CO<sub>2</sub> are the likely cause for the demonstrated increases in  
14 the global temperatures and that climate change as a result of man's activities resulting in  
15 a demonstrated increase in greenhouse gases, especially CO<sub>2</sub> is real, and of concern.

16 **V. RESPONSE TO REBUTTAL TESTIMONY OF JOHN TURNER**

17 **Q. Mr. Turner indicates you made a statement in your direct testimony that no center**  
18 **pivot structures were present along the route. He further states that your statement**  
19 **is wrong, and that he is aware of at least three irrigation systems crossed in Monroe**  
20 **County. What is your response?**

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<sup>4</sup> [http://climate.nasa.gov/climate\\_resources/24/](http://climate.nasa.gov/climate_resources/24/)

<sup>5</sup> <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=18730>

1 A. My conclusions regarding the absence of irrigation systems along the route were based  
2 on detailed route studies conducted in 2014 and 2016. “The Missouri Route Selection  
3 Study (March 2014) conducted by the Louis Berger Group, Inc. on behalf of Grain Belt  
4 Express indicated that there were no center pivot irrigation systems crossed by the  
5 Project. The 2016 Route Selection Study Addendum (June 2016, attached to the Direct  
6 Testimony of Company witness James Puckett as Schedule JPG-2) also confirmed that  
7 there were no center pivot irrigation systems crossed by the Proposed Route in Missouri.”

8           Upon further review and investigation into Mr. Turner’s claim, the statement in  
9 my direct testimony that no center pivots are crossed by the Project is in need of  
10 clarification. Subsequent review of the 2014 Routing Study and discussion with  
11 members of the routing team confirmed that the Project crosses fields with center pivots  
12 irrigation systems. However, the route was purposefully sited across the outside edge of  
13 the pivot irrigation areas, resulting in very short span lengths across the irrigator swept  
14 area. Grain Belt intends to avoid placing structures in the footprint of the irrigator boom  
15 radius, and the presence of the immediately adjacent County Road 104W and County  
16 Road104E provides the option to access any part of the easement directly from the road,  
17 avoiding any impacts to the operation of the irrigation system during or after  
18 construction. To clarify my direct testimony on this subject; the Project does cross fields  
19 with center pivot irrigation but structure placement avoids directly impacting the  
20 operation of these systems.

21 **Q. Mr. Turner indicates that several statements made regarding irrigation suitability**  
22 **are not entirely correct. Specifically:**

1           **1. “The statement aquifers and soils in most of the Missouri counties crossed by**  
2 **the proposed line are not suitable for large-scale center pivot irrigation. This is not**  
3 **true.” (Turner Rebuttal Page 3, Lines 9-11).**

4           **2. “Based on the 1977 General Soil Map of Missouri by the Soil Conservation**  
5 **Service about 57 percent of the proposed route crosses soils and topography suitable**  
6 **for irrigation. (Turner Surrebuttal, Page 4, Lines 14-19)”**

7           **3. “It is a misconception that land need be relatively flat for irrigation. For...**  
8 **but driving through Central Nebraska will show that sprinkler irrigation, including**  
9 **center pivots, is quite adaptable to land that is quite rolling.” (Turner Surrebuttal,**  
10 **Page 4, Lines 14-19)**

11           **What are your responses?**

12       A.     Mr. Turner has a background in irrigated agriculture, and many of the statements he  
13           makes are educated generalizations that would need further refinement to implement for  
14           any anticipated irrigation project. My comments regarding irrigation suitability were to  
15           highlight why irrigation systems are not very common in the project area. For example,  
16           the general soil map of Missouri referenced by Mr. Turner may not be detailed enough to  
17           determine whether or not a particular parcel is irrigable. The detailed county soil survey  
18           (“SSURGO”) as provided in be Web Soil Survey<sup>6</sup> would be detailed enough to indicate if  
19           the soils in the parcel are uniform and have the appropriate soil physical and chemical  
20           characteristics to plan a center pivot irrigation system. The NRCS provides soil criteria  
21           for irrigation.<sup>7</sup> Many soils and landscape settings included by Mr. Turner in his estimate  
22           of 57% irrigable soils in Missouri have significant restrictions, including steep  
23           topography and unfavorable surface textures. This is not to say that irrigation of soils  
24           with limiting features cannot be done. The data imply that extensive irrigation of soils  
25           with multiple unsuited features needs to be carefully considered, and may present

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<sup>6</sup> <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

<sup>7</sup> NRCS Staff. 1997. Irrigation Guide. National Engineering Handbook Part 652. 210-vi-NEH, September 1997).

1 limitations that affect soil productivity that limit choices and may preclude irrigated  
2 agriculture. I believe that a determination of 57% irrigable soils is a simplification that  
3 suggests there is more irrigable land than could be realistically irrigated, otherwise more  
4 irrigation would be evident throughout the state outside of extensive river terraces and the  
5 extremely favorable irrigation district in the bootheel of Missouri that exploits the  
6 Embayment aquifer mentioned by Mr. Turner (rebuttal Testimony of John Turner, page  
7 13, lines 13-14).

8 Protections afforded irrigated agriculture are covered in my direct testimony at  
9 page 15, lines 22-23 and page 16, lines 1-13, Section 7, parts A, B and C in the Mo Ag  
10 Protocol, and in the section on “Irrigation”, page 2 of the AIM Policy. Potential impacts  
11 to irrigated agriculture are also provided in the surrebuttal testimony provided in response  
12 to irrigation concerns raised by Charles Kruse.

13 **Q. Mr. Turner indicated that much of the state could be irrigated with surface water**  
14 **from existing or planned surface reservoirs, and that the Grain Belt Project would**  
15 **preclude development of planned irrigation systems, as well as other conservation**  
16 **practices planned for the future. What is your response?**

17 A. As I previously discussed, Grain Belt has implemented an AIM Policy and Mo Ag  
18 Protocol that focus on coordination with landowners as an integral tool to help address  
19 potential impacts to agricultural operations. These documents support the commitment  
20 Grain Belt Express has made to collaborate with landowners on routing, structure  
21 placement, and landowner-specific construction prescriptions including the location of  
22 current and planned improvements or facilities.

1 **Q. Mr. Turner indicated that the impacts of farming around obstruction such as**  
2 **support structures is more disruptive than just providing a footprint acreage and**  
3 **calculating how much land is lost. What is your response?**

4 A. Mr. Turner is correct. Farm equipment is not made to turn on a dime, avoidance of  
5 structures can result in a “swerve” that may render a small area on either side of the  
6 structure difficult to cover by seeding, tillage, and cultivation. This affected area may be  
7 larger for lattice towers and smaller for monopoles. However, in any event this area is  
8 not expected to result in a significant loss of acreage for any given landowner. Mr.  
9 Turner is also correct that Grain Belt Express has committed to site structures to  
10 minimize their interference with cropland.

11 Additional information on the effect of structures on GPS, equipment usage  
12 efficiency and precision agriculture are provided in my response to Mr. Kruse below.

13 **VI. RESPONSE TO REBUTTAL TESTIMONY OF CHARLES HENKE**

14 **Q. In your opinion has Grain Belt Express adequately addressed the potential for soil**  
15 **impacts that Mr. Henke describes.**

16 A. Yes. As described in my direct testimony, the Project recognizes the potential for  
17 impacts to agriculture, and has developed the AIM Policy and the Mo Ag Protocol to  
18 address the issues. The measures and commitments included in these documents  
19 specifically focus on preserving the fertility of agricultural soils, and identify methods the  
20 project has and will continue to implement to avoid, minimize, and mitigate these  
21 potential impacts. My surrebuttal responses to Mr. Garvin and Mr. Kruse describe in  
22 further detail the specific practices that can be employed to mitigate project related soil  
23 compaction and erosion.

1 **Q. Mr. Henke describes concerns with impacts to his cattle operation during**  
2 **construction. Based on your experience with linear infrastructure development, is**  
3 **the project likely to have any significant impacts to livestock production?**

4 A. No. As described in the Mo Ag Protocol, the Project has committed to coordinating  
5 directly with each landowner to discuss the specific agricultural operations that take place  
6 on the parcel, including the types of livestock that occur on the property and any potential  
7 sensitivities associated with the livestock operations. This coordination effort provides  
8 the landowner an opportunity to better understand the specific location and timing of  
9 construction activities in relation to their livestock operation. Based on my experience,  
10 construction activities associated with transmission lines are typically concentrated at  
11 each structure location, and activities on any given parcel only occur for a short duration  
12 in comparison to the construction of the entire project. Based on the short duration of  
13 construction activities and the preconstruction coordination proposed for each landowner,  
14 disturbance to the livestock, if any, would be limited and short term. It's unlikely that  
15 any significant impacts to Mr. Henke's cattle operation would occur; however, if project-  
16 related impacts or damages to the cattle operation or facilities were realized, the Project  
17 would be responsible to compensate the landowner for damages as described in the Mo  
18 Ag Protocol and as contemplated in the easement agreement.

19 **VII. RESPONSE TO REBUTTAL TESTIMONY OF CHARLES KRUSE**

20 **Q. What is the subject of Mr. Kruse's Testimony?**

21 A. The subject of Mr. Kruse's testimony is the potential negative impacts to farming and  
22 land as a result of the construction of the Project. He specifically addresses potential  
23 impacts to soil and land including soil compaction, erosion, irrigation equipment

1 interference, aerial applications, GPS interference, equipment maneuverability, precision  
2 farming, and concerns regarding storm recovery.

3 **Q. In addition to reviewing the Projects AIM Policy and MO Ag Protocols, does Mr.**  
4 **Kruse refer to any other documents?**

5 A. Mr. Kruse makes specific reference to Schedule CEK-1, which is a report  
6 “Environmental Impacts of Transmission Lines” prepared by the Wisconsin Public  
7 Service Commission (Wisconsin PSC Report). He makes reference to several of the  
8 impacts, and indicates that all of the impacts are valid.

9 **Q. What is your opinion regarding Mr. Kruse’s use of the Wisconsin PSC Report.**

10 A. Mr. Kruse misuses the information in the document, and does not place the document in  
11 proper context. The document is not a study of impacts, but a listing of known potential  
12 impacts resulting from the construction and operation of transmission lines that may need  
13 to be addressed in construction plans in order to avoid, minimize, and mitigate impacts.  
14 Mr. Kruse implies in his testimony that the document suggests that impacts are severe,  
15 and cannot be mitigated. However, the report itself is clear that numerous mitigation  
16 strategies exist that avoid, minimize, and mitigate impacts. The document states in the  
17 introduction: “[T]he first part provides a general summary of the types of analysis and the  
18 means to measure and identify environmental impacts. *The second part is an alphabetic*  
19 *list of potential impacts and the available methods to minimize or mitigate the impacts*  
20 *[emphasis added].”* (Schedule CEK-1, p.1). Mr. Kruse does not acknowledge any of the  
21 mitigation strategies provided in Table 1. Examples of Mitigation Strategies, nor does he  
22 acknowledge significant mitigation strategies associated with most of the agricultural  
23 impacts that are provided with a discussion of the impact.



1 **Q. Can you provide examples of mitigation strategies cited in the Wisconsin PSC**  
2 **Report?**

3 A. Yes. Mr. Kruse provides a direct quote from the Wisconsin PSC report indicating the  
4 potential severity of soil compaction (page 6 lines 18-19 and page 7 lines 1-17),  
5 providing a photographic example of potential rutting and compaction. However, Mr.  
6 Kruse's testimony ignores the key section of the Wisconsin PSC Report that provides  
7 mitigation strategies that address the impact discussed in Mr. Kruse's testimony. These  
8 strategies include:

- 9 1. Avoidance strategies, including identifying sensitive soils and developing route and  
10 access alternatives that avoid heavy traffic on these areas, utilizing existing roads to  
11 the extent possible, constructing during winter, avoiding trafficking sensitive soils  
12 during wet conditions.
- 13 2. Minimization strategies including restricting construction traffic to those vehicles  
14 with low ground pressure or tracked equipment, and matting, and appropriate topsoil  
15 stripping, segregation, and replacement.
- 16 3. Mitigation strategies, including on versus off right of way compaction testing with  
17 cone penetrometers, and chisel plowing or deep ripping as appropriate.

18 Furthermore, as described in my direct testimony, several of these options are specifically  
19 identified or implied in Grain Belt's AIMP and Mo Ag Protocol.

20 **Q. Mr. Kruse indicated that there would be very significant soil compaction and**  
21 **rutting problems associated with the Project. As discussed in more detail in the**  
22 **surrebuttal testimony of Company witness Deann Lanz, Grain Belt Express has**  
23 **committed to incorporate the terms and conditions of the AIM Policy and MO Ag**

1 **Protocol into its easements with landowners. What protections are provided in the**  
2 **AIM Policy and MO Ag Protocol that deal with compaction and rutting?**

3 A. Mitigative actions for compaction and rutting are provided in Section 8, p. 8 of the MO  
4 Ag Protocol. Mitigative actions for compaction and rutting, and soil mixing are also  
5 addressed in detail in my direct testimony at page 20, lines 18-23, page 21 and 22  
6 inclusive, and page 23, lines 1-17.

7 **Q. Mr. Kruse indicated in his rebuttal testimony that he had reviewed the MO Ag**  
8 **Protocol and that the mitigative actions proposed “[are] nice sounding words.**  
9 **These words are similar to Clean Line claiming that they will attempt to stop the**  
10 **rain from falling and restore a house burned by fire.” (Charles Kruse rebuttal**  
11 **testimony, page 8 lines 8-10.) What is your response?**

12 A. The mitigative actions in the Grain Belt Express MO Ag Protocol and AIM Policy are  
13 very similar to and consistent with the sections on mitigation for soil compaction and  
14 rutting described in the Wisconsin PSC report that Mr. Kruse quotes extensively. In fact,  
15 Grain Belt Express considered the mitigation procedures provided in the Wisconsin PSC  
16 Report along with recommendations from several agricultural impact statements prepared  
17 for transmission lines by the Wisconsin DATCP<sup>8</sup>, as well as the mitigative actions  
18 recommended by the Illinois Department of Agriculture.

19 Mr. Kruse’s incorrect statements regarding the commitments that Grain Belt  
20 Express has made fail to recognize that compaction is a hazard associated with any  
21 equipment trafficking of farmland, and the mitigative actions provided in the MO Ag  
22 Protocol and AIM Policy essentially mirror those that growers use to mitigate compaction

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<sup>8</sup> Wisconsin Department of Agriculture, Trade, and Consumer Protection.

1 associated with farm equipment. The simple truth is that the mitigative actions such as  
2 avoiding construction traffic on saturated soils, matting, and deep ripping, and topsoil  
3 stripping work to avoid and minimize compaction and rutting, as acknowledged in the  
4 Wisconsin PSC report.

5 **Q. Mr. Kruse provides three methods to control erosion: terracing, tiling, and grassed**  
6 **waterways, and indicates that erosion control measures provided in the AIMP**  
7 **Policy and MO Ag Protocol would not adequately protect the land during**  
8 **construction or in the future. What is your response?**

9 A. Mr. Kruse is emphasizing conservation practices but is silent on construction erosion  
10 control measures. They are two different issues. Both have been addressed by Grain  
11 Belt Express in testimony, the MO Ag Protocol, and the AIM Policy. The cleared and  
12 other areas within the construction ROW are disturbed areas from which erosion is to be  
13 minimized according to the conditions of the Project Storm Water Pollution and  
14 Prevention Plan (“SWPPP”) that implements the National Pollution Discharge  
15 Elimination System (“NPDES”). The SWPPP and the NPDES and their role in  
16 preventing erosion are covered in my direct testimony at Page 24, lines 14-23, Page 25,  
17 lines 1-22, and Page 26, lines 1-10. The NPDES permit and associated SWPPP are  
18 authorized for a given project by the Missouri Department of Natural Resources under a  
19 Land Disturbance Permit (“LDP”). Grain Belt Express will develop the Project SWPPP  
20 for all potentially disturbed sites along the Project, including cleared areas. The SWPPP  
21 will provide specific information on site characteristics (e.g. size, configuration, soils,  
22 slope degree and length, vegetative cover, etc.) and the suite of BMPs selected to control  
23 erosion, including installation specifics. It will also provide information on compliance

1 inspection. The mandated implementation of the SWPPP within areas proposed for  
2 construction will ensure that erosion along the route has been avoided, minimized, and  
3 mitigated to the extent practicable. In addition, the SWPPP will require regular  
4 inspections, with additional inspections after significant rain events to ensure that the  
5 prescribed erosion and sediment control BMPs are operational and effective.

6 The erosion control practices that Mr. Kruse provides in his surrebuttal testimony  
7 include terracing, grassed waterways, and drain tiling. Protections afforded terracing and  
8 grassed waterways are covered in my direct testimony at page 19, lines 1-22 and page 20,  
9 lines 1-17, in the MO Ag Protocol, Section 10, parts A, B and C, and in the section on  
10 “Drainage and other Soil Conservation Practices”, page 2 of the AIM Policy.

11 **Q. Mr. Kruse indicated that erosion control measures provided in the AIM Policy and**  
12 **MO Ag Protocol would not adequately protect the land during construction or in**  
13 **the future. What is your response?**

14 A. Mr. Kruse’s assessment is unsubstantiated and invalid. Industry standard Best  
15 Management Practices are mandated in the Project SWPPP to control erosion on the  
16 portions of the ROW that are disturbed during construction. Environmental Inspectors  
17 will be routinely evaluating erosion controls and erosion control devices and after all  
18 significant rains to ensure that they are operating and in good repair. The SWPPP is a  
19 required authorization. Violation of permit conditions can result in fines or work  
20 stoppage

21 Mr. Kruse’s speculation as to permanent, construction-related damage to  
22 conservation practices such as terraces, grassed waterways, and drain tile installations are  
23 unfounded. Mr. Kruse is suggesting that the practices that have been installed would not

1 be repaired if damaged, as though he expects that Grain Belt Express simply would not  
2 do it. Grain Belt Express has committed to control erosion during construction as  
3 required by state and federal regulations, has demonstrated a commitment to work with  
4 landowners to identify conservation practices, and will repair the practices to  
5 preconstruction condition consistent with the AIM Policy, the MO Ag Protocol, and any  
6 permit or conditions that would be attached to authorizations such as the CCN should the  
7 Project be granted a certificate.

8 **Q. Mr. Kruse takes issue with your statement that irrigation is not expected to be a**  
9 **common agricultural land use along the preferred route in Missouri. He calls the**  
10 **statement “unbelievable”, and provides Schedule CEK-2 providing data from the**  
11 **Missouri Agricultural Statistics Service to show that 120 farms in excess of 10,636**  
12 **acres of land irrigated are in the 8 counties crossed. He calls this a significant**  
13 **portion of the eight counties affected. What is your response?**

14 A. Mr. Kruse is misinterpreting the data. In fact I used the same agricultural statistics data,  
15 combined with previous route assessment of irrigated agricultural operations and a basic  
16 knowledge of irrigation requirements, to conclude that irrigation is not a significant land  
17 use along the Project route. I have expanded the 2012 agricultural statistics data to  
18 clarify my statement, provided as **Schedule JLA-8**. The data show that as of 2012,  
19 irrigated farms were only 1.6% of the total farms in the counties crossed (120 irrigated  
20 farms of 7,354 farms in the counties). The acreage of irrigated farms is even smaller, at  
21 0.8% (18,084 acres of irrigated farms of 2,311,636 farmed acres). These data do not  
22 support Mr. Kruse’s contention that irrigated farms are a significant portion of the eight  
23 counties crossed.

1 Supporting this conclusion is the observation that no irrigated farms were crossed  
2 in the Project's original route evaluation, as stated in my direct testimony at Page 15,  
3 Lines 4-11. Subsequently, three center pivot irrigated fields have been found to be  
4 crossed in Monroe County. In the irrigated area, the route parallels a road to the very  
5 north of the center pivots. While construction may temporarily affect irrigation, it will  
6 not, as Mr. Kruse indicates, "cause significant problems, which will be very costly, and in  
7 some cases almost impossible to resolve" (Charles Kruse Rebuttal Testimony, page 12,  
8 Lines 12-16).

9 **Q. Mr. Kruse has indicated that "It is at best impractical and at worst impossible to**  
10 **reconfigure a center pivot system around a structure such as the one Clean Line is**  
11 **proposing." (Rebuttal Testimony of Charles Kruse, Page 12, Lines 114-16). What is**  
12 **your response?**

13 A. Mr. Kruse assumes that a structure would be located within the area irrigated by the  
14 Center Pivot. However, Grain Belt Express has evaluated the route and indicated that  
15 structures would not be placed within the irrigation boom-swept area in Missouri.  
16 Concerns that an irrigation system in Missouri would need extensive reconfiguration are  
17 unfounded. More detailed information on protections afforded irrigated agriculture are  
18 covered in my direct testimony at page 15, lines 22-23 and page 16, lines 1-13, Section 7,  
19 parts A, B and C in the MO Ag Protocol (Schedule JLA-2), and in the section on  
20 "Irrigation", page 2 of the AIM Policy (Schedule JLA-3).

21 **Q. Mr. Kruse has indicated that the Grain Belt Express would impact aerial**  
22 **application of agricultural chemicals, increasing farm operator costs and decreasing**  
23 **profits. What is your response?**

1 A. Applications of agricultural chemicals are covered in my direct testimony at page 27,  
2 lines 21-23, page 28 lines 1-23, page 28, lines 1-23, and page 29, lines 1-11, the section  
3 on “Aerial Application”, page 3 of the AIM Policy, and are addressed in detail in this  
4 testimony provided in response to Dale Pence. Mr. Kruse’s comments regarding the  
5 potential impacts of the Grain Belt Express project are fully discussed in the surrebuttal  
6 testimony to Dale Pence’s rebuttal testimony. Mr. Kruse is silent on any of the impact  
7 mitigation measures that the Project has developed to address potential impacts.

8 In summary, Mr. Kruse’s concerns are mitigated by the following practices.

- 9 • Grain Belt Express has a strong commitment to collaborate with landowners to  
10 develop structure locations and transmission lines that avoid, minimize, and  
11 mitigate impacts to their agricultural practices. Impacts would include effects to  
12 aerial spraying applications. In many cases, we anticipate that minor adjustment  
13 to the structure locations can place structures and transmission lines in locations  
14 that avoid or minimize impacts to aerial spraying of agricultural chemicals.
- 15 • There may be temporary and long term effects on farm income resulting from the  
16 need to accommodate the Grain Belt Express structures and transmission lines  
17 when aeriually applying agricultural chemicals. Grain Belt Express has committed  
18 to affected landowners that they will be made whole for any damages or losses  
19 that occur as a result of the Project for so long as the Project is in operation. A  
20 process for the calculation of agricultural damages has been provided and is  
21 addressed in the Easement Agreement.

1 **Q. Mr. Kruse has indicated that there may be possible Global Position Systems**  
2 **(“GPS”) interference associated with the conductors and structures for the Project.**

3 **What is your response?**

4 A. Potential Impacts to GPS systems that are commonly used for aerial applications and  
5 precision farming are addressed in my direct testimony at page 26, lines 11-20 and page  
6 27, lines 1-5. As Mr. Kruse correctly notes, interference for GPS is unlikely. “[T]o be  
7 fair the [2002] study<sup>9</sup> did indicate that major interference was unlikely, but importantly  
8 that further study was warranted” (rebuttal testimony of Charles Kruse, P. 15, lines 24-  
9 25.

10 Mr. Kruse does not acknowledge more recent studies have been done, and GPS  
11 civil survey and precision agriculture is routinely performed in close proximity to  
12 transmission lines. A more recent, highly detailed investigation of the effects of  
13 proximity to a 500,000 volt DC transmission line was performed specifically to evaluate  
14 the impacts of transmission lines to agricultural use of GPS. That document is attached to  
15 my surrebuttal as **Schedule JLA-9**. No transmission line effect on Global Navigation  
16 Satellite System (“GNSS”) measurements was found to influence the quality of the  
17 navigation solutions provided by GPS. In addition, the test results showed normal  
18 operation of a highly accurate, commercially available survey grade RTK system and its  
19 radio link (450 MHz) when in close proximity to the transmission lines. Confirming the  
20 lack of significant effect of transmission lines on GPS operation or use is the fact that

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<sup>9</sup> As cited in Massie, L., A. Halpin, and M. Wyatt. Agricultural Impact Statement, American Transmission Company, LLC Rockdale – West Middleton Transmission Line, Dane County. Wisconsin Department of Agriculture, Trade, and Consumer Protection DATCP #3487. P. 56



1 survey grade GPS equipment is used to survey features in direct proximity to or under  
2 transmission line wires.

3 **Q. Based on the data you have reviewed on GPS impacts, do you believe that the Grain**  
4 **Belt Express Project will have any effect on GPS use for survey, precision**  
5 **agriculture, or aerial applications of agricultural chemicals?**

6 A. I do not think there will be any noticeable effect.

7 **Q. Mr. Kruse also states that it would be a “nightmare” to utilize modern, large farm**  
8 **equipment around structures, and asserts that the use of precision farming would be**  
9 **much harder in the presence of such structures. What is your response?**

10 A. The literature, and common civil survey and precision agriculture practice indicate that  
11 the impacts of HVTL conductors on GPS operation are negligible. Moreover, the  
12 structures used to support the wires are widely spaced, and would be located so as to  
13 minimize the numbers of structures within agricultural fields. Issues with maneuvering  
14 large farm equipment around structures will be limited to only a few locations for any  
15 single landowner. Agricultural practices under the conductors would continue  
16 unimpeded. The use of GPS systems to steer farm equipment will greatly reduce the  
17 inconvenience associated with navigating around support structures. The current  
18 precision farming technologies allow for more efficient farming practices around  
19 obstacles that may occur in a field by implementing auto-row shut-offs on planter and  
20 section control on sprayers, fertilizer spreaders, and toolbars, all of which help to  
21 minimize any farming overlap issues, thus decreasing or avoiding any inefficiencies or  
22 impacts to crop yields.

1 **Q. Mr. Kruse expresses concern that occasional storms could topple structures and lay**  
2 **conductors across farm fields, and that the resulting storm recovery efforts would**  
3 **do significant damage to the land. What is your response?**

4 A. Mr. Kruse's storm recovery concerns are addressed in Grain Belt Express' contingency  
5 plans as discussed in the direct testimony of Tom Shiflett.

6 **Q. Does this conclude your Direct Testimony?**

7 A. Yes.