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Witness: Michael Goggin
Sponsoring Party: Wind on the Wires &
The Wind Coalition
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MISSOURI PUBLIC SERVICE COMMISSION

DOCKET NO. EA-2016-0358

*** * PUBLIC * ***

CROSS-SURREBUTTAL TESTIMONY

OF

MICHAEL GOGGIN

SUBMITTED ON BEHALF OF:

WIND ON THE WIRES and THE WIND COALITION

FEBRUARY 21, 2017

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1 **INTRODUCTION**

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

3 **A:** My name is Michael Goggin, and I am the Senior Director of Research for
4 the American Wind Energy Association (“AWEA”). My business address is
5 1501 M St NW, Suite 1000, Washington DC, 20005.

6 **Q: For whom are you testifying?**

7 **A:** I am testifying on behalf of Wind on the Wires and The Wind Coalition.

8 **Q: Are you the same Michael Goggin who previously testified in this**
9 **proceeding on behalf of Wind on the Wires and The Wind Coalition?**

10 **A:** Yes.

11 **Q: What is the purpose of your testimony?**

12 **A:** The purpose of my cross rebuttal testimony is to respond to the rebuttal
13 testimony of Show-Me Concerned Land Owners’ witnesses Donald Shaw,
14 to Missouri Landowners Alliance witnesses Joseph Jaskulski, and Paul
15 Glenden Justis, Jr., and to Missouri Public Service Commission Staff. I
16 respond to Mr. Shaw’s comments regarding the need to regulate CO₂
17 emissions (Shaw Rebuttal Testimony at page 6), to Mr. Justis’ capital
18 costs for wind energy (Justis Rebuttal, Sched. PGJ-01 HC) and the
19 production tax credit wind resources qualify for under IRS guidance, to
20 three of Mr. Jaskulski’s statements regarding the need for a memorandum
21 of understanding with wind farm owners and the Continuity Safe Harbor
22 provision and the ability for Kansas wind projects (Jaskulski Rebuttal
23 Testimony at 4 and 14). I also respond to Staff’s concern about

24 congestion in the event Ameren Transmission Company of Illinois' Mark
25 Twain project, Ameren Missouri's use of RECs for compliance with the
26 Missouri Renewable Energy Standard and comments about emissions
27 from additional ancillary services needed to integrate additional wind
28 resources carried by the Grain Belt Express line. (Staff Rebuttal Report at
29 6-7, 17 and 38).

30

31 **RESPONSE TO SHOW ME CONCERNED LANDOWNERS' WITNESS SHAW**

32 **Q: Show Me Concerned Landowners' witness Shaw testified that there**
33 **is no link between CO₂ and global warming and if there is the Grain**
34 **Belt Express project would have a miniscule impact on the global**
35 **reduction of CO₂. (Shaw RTTY at page 6, lines 17-19). Do you have a**
36 **response to that?**

37 **A:** There is no legitimate dispute of the observable facts that CO₂ is a
38 greenhouse gas that warms the earth, and that atmospheric
39 concentrations of CO₂ are increasing due to human activity, particularly
40 the combustion of fossil fuels. The overwhelming consensus of scientists
41 is that man-made CO₂ emissions are causing dangerous climate change,¹
42 and the misconceptions put forward by Mr. Shaw have been thoroughly
43 debunked by the scientific literature.² Businesses realize that

¹ Summary for Policymakers, "Climate Change 2013: The Physical Science Basis Contribution of Working Group I to the Fifth Assessment of the Intergovernmental Panel on Climate Change" (2013) available at https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

² Scientific American, "No Pause in Ocean Warming" (Jan. 4, 2017) available at <https://www.scientificamerican.com/article/no-pause-in-ocean-warming/>

44 requirements to reduce CO₂ emissions are inevitable, and that in many
45 cases climate change negatively affects their bottom line. In an effort to
46 gain competitive advantage by leading the field in making inevitable cuts
47 to CO₂ emissions, many electric utilities and other companies are
48 continuing to move to cleaner forms of electricity generation. In addition to
49 the quotes from large utilities I cited in my Rebuttal Testimony, half of the
50 Fortune 500 companies have greenhouse gas reduction plans in place.³
51 More than 745 companies and financial investors who in combination
52 employ more than 1.8 million Americans signed a letter to President
53 Trump encouraging him to continue supporting the Paris Agreement to
54 reduce CO₂ levels so as to prevent global temperature rise of 2 degrees
55 Celsius by the end of the century.⁴ It is not one company or one action
56 that reduces CO₂ emissions, it is a vast number of small actions. Grain
57 Belt Express is just one of those efforts. It will enable 4,000 megawatts of
58 wind generation to operate. Wind turbines do not create electricity
59 through combustion thus it does not emit CO₂. A wind turbine's electricity
60 displaces electricity that would have be generated by a coal or natural gas
61 electric generating plant, so the overall CO₂ emissions rate is reduced.
62 Thus, Mr. Jaskulski's comparison of the CO₂ emission reduction benefits
63 of the Grain Belt Express line to the global CO₂ emission levels is a poor

³ Los Angeles Times, "Trump's vow to scrap the Paris climate change accord faces skepticism from corporations and GOP moderates" (Feb. 15, 2017) available at <http://www.latimes.com/politics/la-na-pol-trump-paris-accord-20170215-story.html>

⁴ *Id.*; see also "Investors with \$2.8 trillion in assets unite against Donald Trump's climate change denial" available at <http://www.independent.co.uk/news/business/news/investors-billionaires-trillion-assets-unite-donald-trump-climate-change-denial-global-warming-a7581161.html>

64 yardstick by which to measure the Project's benefits. It is beneficial and it
65 is one of many similar actions needed to help control man-made CO₂
66 emissions. For Missouri utilities and ratepayers, taking steps to reduce
67 CO₂ emissions now, such as approving the Grain Belt Express project, will
68 greatly minimize costs associated with reducing CO₂ emissions in the
69 future.

70

71 **RESPONSE TO SHOW ME CONCERNED LANDOWNERS' WITNESS JUSTIS**

72 **Jr.**

73 **Q: Show Me witness Justis prepared a levelized cost of energy for**
74 **Kansas Wind that uses a wind energy capital cost of ** [REDACTED]**
75 **[REDACTED]**. (Justis Sched. PGJ-01**
76 **HC). Do you have a response to that?**

77 **A:** First, his starting value is too high. Mr. Justis claims his **** [REDACTED]****
78 figure comes from the regional results of a U.S. Energy Information
79 Administration (EIA) document, but he appears to have mis-interpreted
80 that document as both the national and regional results included in that
81 report are significantly lower than what he cites. Specifically, the actual
82 national average overnight capital cost in that document is \$1,686/kW,
83 while the regional cost for wind projects in SPP is lower at \$1,536/kW.⁵
84 Other reports based on empirical data confirm that his number is too high,
85 with DOE/LBNL data indicating an average cost of around \$1,637/kW

⁵ U.S. EIA, "Cost and Performance Characteristics of New Generating Technologies, Annual Energy Outlook 2017" (Jan. 2017) available at http://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf, pages 2 and 3

86 (\$2015), based on data for wind projects installed in 2015 in the Interior
87 region of the U.S., which includes Kansas.⁶

88 A second error is his escalation rate. The current trend of wind
89 costs is strongly downward, decreasing by 66% over the last 7 years.⁷
90 National Renewable Energy Laboratory results indicate this trend is
91 expected to continue, with early 2020 costs for the wind resource
92 categories associated with Kansas expected to fall by more than \$100/kW
93 in the mid-cost projection, and by more than \$300/kW in the low-cost
94 scenario. In no scenario does the real cost of wind increase.

95 **Q: Mr. Justis claims the in-service date for the wind associated with the**
96 **Grain Belt Express project is likely to be 2022 rather than 2021, and**
97 **therefore qualifying for a 60% production tax credit instead of 80%,**
98 **because of his claim that there are likely to be delays in the project.**
99 **Does Internal Revenue Service (IRS) guidance provide for such**
100 **delays in interconnecting wind projects?**

101 **A.** Yes. In its 2016 guidance, the IRS provides a list of “excusable
102 disruptions” that allow a wind project to still qualify for the higher level of
103 PTC if its completion were impaired by factors beyond its control, and that
104 list includes “interconnection-related delays, such as those relating to the
105 completion of construction on a new transmission line or necessary
106 transmission upgrades to resolve grid congestion issues that may be

⁶ U.S. Dept. of Energy and Lawrence Berkeley National Laboratory, “2015 Wind Technologies Market Report”, Figure 43, available at <https://emp.lbl.gov/publications/2015-wind-technologies-market-report>

⁷ Lazard, “Lazard’s Levelized Cost of Energy Analysis -- version 10.0” (Dec. 2016) available at <https://www.lazard.com/media/438038/levelized-cost-of-energy-v100.pdf>, slide 10

107 associated with a project's planned interconnection.”⁸ Alternatively, a wind
108 project can be placed into service prior to 2022, even if the Grain Belt
109 Express line is not yet in service. In doing so the wind project would still
110 qualify for the production tax credits under the safe harbor provision.

111

112 **RESPONSE TO MLA WITNESS JASKULSKI**

113 **Q: In MLA witness Jaskulski's testimony he expresses concern that**
114 **Grain Belt Express does not have memoranda of understanding with**
115 **wind generators. (Jaskulski RTTY at 4 lines 54-58). What are your**
116 **thoughts about that?**

117 **A:** I do not share his concern. It is becoming more common for transmission
118 development to precede the development of wind resources.
119 Transmission planners or transmission developers have pro-actively
120 planned transmission to high wind resource areas before wind projects
121 have been built as a way of tapping into the potential of that market.⁹ We
122 have seen this work in ERCOT, SPP, and MISO. This was done with the
123 Competitive Renewable Energy Zone lines in Texas,¹⁰ the Priority Projects
124 in SPP,¹¹ and the Regional Generator Outlet Study in MISO,¹² which

⁸ IRS, Notice 2016-31, available at <https://www.irs.gov/pub/irs-drop/n-16-31.pdf>, page 7

⁹ See generally, FERC, Order 1000, at ¶¶ 2, 3, 6, 29, 38, 45, available at <http://www.ferc.gov/whats-new/comm-meet/2011/072111/E-6.pdf>.

¹⁰ Electric Reliability Council of Texas (“ERCOT”), Competitive Renewable Energy Zones (CREZ) Transmission Optimization Study, (April 2008), attachment as part of ERCOT filing with the Public Utilities Commission of Texas, available at <http://pbadupws.nrc.gov/docs/ML0914/ML091420467.pdf>.

¹¹ SPP, “Priority Projects,” <https://www.spp.org/engineering/transmission-planning/priority-projects/>

¹² MISO, Regional Generation Outlet Study, available at <https://www.midwestiso.org/Planning/Pages/RegionalGenerationOutletStudy.aspx>.

125 developed the plan for the Multi-Value Projects that were approved by
126 MISO. After the CREZ lines were announced, ERCOT has seen around 9
127 GW of wind farms built, with another 11 GW having signed
128 Interconnection Agreements, most in areas served by the CREZ lines.¹³
129 Similarly, since the Multi-Value Project lines were approved in 2011, 13.7
130 GW of wind resources have been sited and built in areas proximate to
131 those lines, and MISO projects that another 10.6 GW is yet to be built.
132 This is consistent with the fact that there is a mismatch in development
133 times between transmission and wind farms. A wind farm can be planned
134 and built in a few years or less, whereas the time from planning to in-
135 service date of a transmission line is typically longer than three years.

136 **Q: Mr. Jaskulski states that if the Grain Belt Express lines does not**
137 **enter service until 2022, that the wind farms using the line will not**
138 **qualify for the Continuity Safe Harbor provision and will lose their**
139 **eligibility for the federal production tax credit.** (Jaskulski RTTY at 14
140 lines 269-272). **Do you share his concern?**

141 **A:** As explained above, I do not. As Mr. Jaskulski acknowledges, in 2016
142 guidance the IRS provides a list of “excusable disruptions” that allow a
143 wind project to still qualify for the higher level of PTC if its completion were
144 impaired by factors beyond its control, and that list includes
145 “interconnection-related delays, such as those relating to the completion of

¹³ Electric Reliability Council of Texas (ERCOT), “ERCOT Monthly Operational Overview” (Jan. 15, 2017) available at http://www.ercot.com/content/wcm/key_documents_lists/27311/ERCOT_Monthly_Operational_Overview_2016-12.pdf

146 construction on a new transmission line or necessary transmission
147 upgrades to resolve grid congestion issues that may be associated with a
148 project's planned interconnection."¹⁴ Alternatively, a wind project can be
149 placed into service prior to 2022, even if the Grain Belt Express line is not
150 yet in service. In doing so the wind project would still qualify for the
151 production tax credits under the safe harbor provision.

152

153 **RESPONSE TO MISSOURI PSC STAFF**

154 **Q: In its Rebuttal Report (at pages 6-7) Staff notes that the**
155 **Commission's approval of the ATXI Mark Twain is the subject of**
156 **appeal and raises questions about what would happen to the Grain**
157 **Belt Express if the Mark Twain line does "not proceed as planned."**

158 **A:** The Mark Twain line is one of seventeen transmission projects approved
159 by MISO in 2011 that provided multiple benefits to the system -- such as
160 improving the reliability of the system and lowering the cost of the
161 production of electricity. MISO's function is to perform transmission
162 planning across the Midwest (parts of Missouri, Michigan, Indiana, Illinois,
163 Kentucky, Arkansas, Louisiana, Mississippi, Texas, North Dakota and
164 South Dakota, and all of Wisconsin Iowa and Minnesota) inclusive of
165 Ameren Missouri. All planning that MISO has performed since the Mark
166 Twain was approved assumes that the Mark Twain line will be built. In the
167 event the Mark Twain is not built MISO will simply make that change, and
168 re-evaluate the system and propose transmission additions to solve any

¹⁴ IRS, Notice 2016-31, available at <https://www.irs.gov/pub/irs-drop/n-16-31.pdf>, page 7

169 problems arising from its absence. That is a routine transmission planning
170 function that should not be viewed as a major impediment of the Grain
171 Belt Express.

172 **Q: Staff points out that Ameren Missouri does not “need” to purchase**
173 **renewable energy to meet its 2021 RES compliance requirement.**

174 (Staff Report at 17). **Do you have a response to that?**

175 **A:** Staff witness Beck is correct that utilities are allowed to purchase RECs
176 for compliance, however, it is possible that Missouri utilities will only be
177 allowed to use RECs for compliance if it is related to energy that is used
178 in Missouri. On page 12 of my rebuttal testimony I explain that the
179 Missouri Supreme Court is entertaining a case (State of Missouri ex rel.
180 Missouri Coalition for the Environment v. Joint Committee on
181 Administrative Rules, court docket no. SC95546) that would reinsert
182 language into the RES rule (4 CSR 240-20.100(2)(B)(2)) allowing a REC
183 to be used for compliance with the RES only if the REC is tied to energy
184 that was sold to Missouri customers. In addition, the energy provided by
185 the Grain Belt Express would be at the low end of energy rates Ameren
186 Missouri charges its customers, when I compare it to the following
187 Summer and Winter Rates for the following customer classes:

	Winter Rates (¢ per kWh)	Summer Rates (¢ per kWh)
Large Primary Service	3.02	3.41
Small Primary Service	3.66 to 6.30	5.05 to 10.00
Large General Service	3.80 to 6.51	5.23 to 10.34
Small General Service	4.65 to 8.06	10.81
Residential Service	5.73 to 8.58	12.08

188

189 Thus renewable energy delivered into Ameren Missouri via the Grain Belt
190 Express is multi-beneficial in that it allows for compliance with the RES,
191 provides low cost energy (relative to current electric rates) and provides a
192 hedge against fuel price volatility since most renewable energy is
193 purchased through a 10 or 20 year contract.

194 **Q: Staff states that Grain Belt Express’s production modeling “does not**
195 **account for any increase in emissions that will result from the**
196 **ancillary service activities such as regulating reserves necessary to**
197 **integrate any increase in wind generation.” (Staff Report at 38). Do**
198 **you have a response to that?**

199 **A:** The misconception that wind generation variability and uncertainty has a
200 significant impact on emissions has been thoroughly debunked. NREL
201 analysis has shown that even at penetrations of wind and solar energy in
202 excess of 33%, the variability and uncertainty of these resources has a
203 “negligible” (0.3%) impact on emissions, meaning wind and solar provide
204 99.7% of the expected emissions reductions.¹⁵ I have conducted analysis
205 of ERCOT data, which shows that wind has a minimal impact on total
206 reserve needs, particularly regulation reserves, in ERCOT.¹⁶

207 **Q: Does this conclude your testimony?**

208 **A:** Yes.

¹⁵ NREL, “The Western Wind and Solar Integration Study Phase 2” (Sept. 2013) available at <http://www.nrel.gov/docs/fy13osti/55588.pdf>

¹⁶ AWEA’s Into the Wind blog, “Fact Check: Wind’s integration costs are lower than those for other energy sources,” (July 2014) available at <http://www.aweablog.org/fact-check-winds-integration-costs-are-lower-than-those-for-other-energy-sources/>

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

In the Matter of the Application of Grain Belt)
Express Clean Line LLC for a Certificate of)
Convenience and Necessity Authorizing it to)
Construct, Own, Operate, Control, Manage)
and Maintain a High Voltage, Direct Current)
Transmission Line and an Associated)
Converter Station Providing an)
Interconnection on the Maywood 345 kV)
Transmission Line)

Case No. EA-2016-0358

AFFIDAVIT OF MICHAEL GOGGIN

I, Michael Goggin, being duly sworn, declare under oath as follows:

1. My name is Michael Goggin. I am the Senior Director of Research for the American Wind Energy Association and my business address is 1501 M Street NW, Suite 1000, Washington, D.C. 20005. I make this affidavit in support of cross surrebuttal testimony I submit on behalf of Wind on the Wires and The Wind Coalition in the captioned docket before the Missouri Public Service Commission.

2. Attached hereto is my cross rebuttal Testimony, labeled as *Cross Surrebuttal Testimony of Michael Goggin Submitted on Behalf of: Wind on the Wires and The Wind Coalition*, that consists of 12 pages of questions and answers, a table of contents and a cover page.

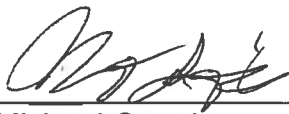
3. The aforementioned documents were prepared by me or under my direction and control.

4. I have personal knowledge of the facts set forth in those documents.

5. If I were asked under oath the same questions posed therein, including my schedules, I would provide the same answers contained therein.

6. The answers provided in the attached testimony, including my schedules, are true and correct to the best of my knowledge and belief.

Further, affiant sayeth naught.



Michael Goggin

STATE OF District of Columbia
COUNTY OF _____

Subscribed and Sworn or Affirmed before me

this 21st day of February 2017.



Notary Public

CYNTHIA M. JOHNSON
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires June 30, 2018

My Commission expires: _____

