

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) File No. EA-2014-0207
Current Transmission Line and an Associated)
converter Station Providing an Interconnection on the)
Maywood-Montgomery 245 kV Transmission Line.)

CROSS-SURREBUTTAL TESTIMONY OF

MATT LANGLEY

ON BEHALF OF

INFINITY WIND POWER

October 14, 2014

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

2 **Q. Please state your name.**

3 A. My name is Matt Langley.

4 **Q. By whom and in what capacity are you employed?**

5 A. I work for Infinity Wind Power (Infinity), located at 3760 State Street, Suite 200, Santa
6 Barbara, CA 93105. I am the Director of Business Development for Infinity and have
7 held this position since March 2012.

8 **Q. Are you the same Matt Langley who Rebuttal Testimony in this matter on
9 September 15, 2014?**

10 A. Yes.

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

12 A. The purpose of my testimony is to respond to portions of the rebuttal testimony of Mr.
13 Michael Proctor, filed on behalf of Show-Me Concerned Landowners (Show-Me),
14 relating to transmission congestion and wind farm capacity factors. Additionally, I will
15 respond to the rebuttal testimony of Staff witness Mr. Daniel Beck as it relates to his
16 testimony regarding the status of wind projects in Kansas.

17 **Q. How is your testimony structured?**

18 A. I will first address the testimony of Mr. Proctor and will then address the testimony of
19 Mr. Beck.

20 **II. Cross-Surrebuttal to testimony of Mr. Michael Proctor**

21 **Q. On page 9 of his testimony, Mr. Proctor states that he used a wind capacity factor of
22 50%, implying that the actual mid-range capacity factor for Kansas wind may be as
23 low as 45%. How do you respond to Mr. Proctor's representation of the current**

1 **capacity factor for Kansas wind and his use of a 50% capacity factor for potential**
2 **projects connecting to the Grain Belt Express project in 2018?**

3 A. I disagree that a 45% or even 50% capacity factor for wind projects in Kansas is an
4 appropriate figure when discussing projects that will be built in conjunction with the
5 Grain Belt Express Project in 2018. The capacity factor on wind projects is an ever
6 changing statistic, and is particularly dependent on turbine technology. Compared to
7 fossil generation, wind energy technology is still relatively young, and the gains that are
8 being made in the technology are significant, so what we see today in terms of capacity
9 factors will most certainly differ in the future as technology continues to advance. For
10 example, while I cannot share specific project details because of confidentiality issues, I
11 can say that net capacity factors have improved by an average of about 10% across
12 Infinity's wind projects between 2012 and today. Given the competitive nature of this
13 industry, we would expect to see continued improvements over the next four years. Even
14 if the capacity factors improved at a slower rate than the last two years, we would still
15 expect to see capacity factors above 50%, for even the lowest performing turbines in the
16 market. In fact, with the leading technology of today on the most competitive sites, the
17 industry is easily able to achieve capacity factors above 50%, and in many locations even
18 above that. To illustrate this point, I've attached as **Exhibit ML-1**, information from a
19 recent filing made by Southwestern Public Service Company (SPS) in support of a
20 Purchase Power Agreement approval matter that was before the New Mexico Public
21 Regulatory Commission. Specifically, Exhibit ML-1 is attachment BFW-2 from the
22 testimony of Bennie F. Weeks of SPS, consisting of a table from all of the bids SPS

1 received as part of their solicitation.¹ From this table one can calculate and see that there
 2 are several sites that have capacity factors over 50%.² For example, the project identified
 3 in the table as SPS02_300MW, when calculated, shows a capacity factor of 53%.³ While
 4 these projects are in Texas, New Mexico and Oklahoma, a cursory review of the
 5 publically available information (see
 6 http://apps2.eere.energy.gov/wind/windexchange/wind_maps_none.asp for example) on
 7 wind speeds in the United States shows that the wind resource in Kansas is as good, or
 8 better than the resources in those states, so one can logically extrapolate that the 55%
 9 capacity factor used by Grain Belt Express witness Mr. Berry for Kansas wind projects
 10 that will utilize the Grain Belt Express project in 2018 and beyond, if approved, is
 11 reasonable when considering that even using technology from 2-3 years ago on projects
 12 in areas with equal or lower wind speeds than Kansas, we are already experiencing
 13 capacity factors in excess of 50%. Therefore, Mr. Proctor's use of what he views as mid-
 14 range capacity factors based on 2012 data is of limited value because it tends to
 15 understate current capacity factors, and fails to take into consideration technological
 16 advances that will be in place in 2018, which will arguably result in higher capacity
 17 factors for wind projects in the future.

18 **Q. Beginning on page 27, Mr. Proctor implies that wind from MISO will be cheaper**
 19 **than wind delivered by the Grain Belt Express project, in part, because only limited**
 20 **new transmission would be required for the MISO wind. Is Mr. Proctor's**

¹ Case No. 13-00233-UT, In the Matter of Southwestern Public Service Company's Application for Approval and Authority To: (1) Enter Into Separate Purchased Power Agreements with Nextera Energy Resources; Mammoth Plains and Palo Duro Wind Energy Centers and Infinity Wind Power's Roosevelt Wind Ranch for Wind Energy; and (2) Recover the Associated Energy Costs Through its Fuel and Purchased Power Cost Adjustment Clause.

² Net Capacity Factor = MWh divided by (MW * 8,760) with 8,760 being the number of hours in a year.

³ 1,390,944 divided by 2,628,000 = 53%, where 2,628,000 is the product of 300MW*8760.

1 **comparison of MISO wind to the wind that would be delivered via the Grain Belt**
2 **Express project appropriate?**

3 A. I do not believe so. The core issue is that in many ways, the product that is being
4 delivered to Ameren via the Grain Belt Express DC line is very different from an energy-
5 only wind farm from somewhere in MISO. When Ameren purchases power from the
6 projects connecting via the Grain Belt Express, Ameren will be able to receive a
7 predictable, cost effective resource with more attributes. As Mr. Proctor notes, when
8 Ameren is considering the purchase of wind from South Dakota or Minnesota, they either
9 have to take an energy-only resource or obtain firm transmission to purchase an Energy
10 and Capacity Resource. In the first case, the utility will not be able to obtain the benefits
11 of the capacity value from the wind farm. In the second case, Ameren will need to
12 acquire firm transmission. By contrast, for the Grain Belt Express project, Ameren (or
13 any other buyer in MO) will be able to obtain the benefits of capacity and energy, without
14 having to purchase firm transmission from MISO. Additionally, for the AC projects, the
15 MISO projects will also experience curtailment and congestion charges that they would
16 not see from projects associated with the Grain Belt Express project. I disagree with Mr.
17 Proctor's assessment that new wind projects in MISO would not require additional
18 transmission upgrades to build more projects in Minnesota or South Dakota. While the
19 CAPX 2020 projects will alleviate much of the congestion costs for existing projects, it is
20 logical to assume that this new capacity will be quickly consumed by projects that are
21 already planned for other purchasers. This is the pattern that the industry has seen in
22 other states, including Oklahoma, Texas and Kansas.

1 As discussed, in order for a Missouri utility to benefit from the capacity value of
2 the projects, they will need to also purchase firm transmission. This is problematic
3 because no one can purchase firm transmission rights for 20 years due to the structure of
4 the MISO market and how congestion and transmission rights are allocated. A more
5 typical duration is two years. The cost of these rights is very difficult to forecast for even
6 a short period of time, and even more complicated for 20 years. As a result, the utility
7 has to make a lot of assumptions when forecasting these costs. This uncertainty can add
8 significant expense to the ratepayer and the utility. By contrast, the Grain Belt Express
9 projects will not need to make the estimates, and the cost will be known. This should
10 have the effect of making the financing process significantly more streamlined and less
11 expensive. Furthermore, it will mean that the price that the developer charges to the
12 utility for the power will not be subject to variation over the twenty year life of the
13 contract.

14 **II. Cross-Surrebuttal to testimony of Mr. Daniel Beck**

15 **Q. On page 8 of his rebuttal testimony, Mr. Beck suggests that the wind projects in**
16 **Western Kansas have not entered construction because they have not obtained**
17 **finance commitments, and not because of a lack of transmission infrastructure.**
18 **How do you respond this suggestion?**

19 A. I disagree with Mr. Beck's analysis on this point. For all energy projects, financing only
20 becomes available after a long term revenue contract is secured. The lack of transmission
21 in Western Kansas is a major reason why these contracts are not more plentiful.
22 Currently, the only places wind developers can efficiently market energy is in Kansas,
23 and the immediately neighboring states. The point of the Grain Belt Express project is to

1 expand that market to include states to the east where there is significant demand for
2 wind energy, and a lower supply to meet that demand. The Grain Belt Express project
3 will allow connection of high quality wind projects with high quality markets.

4 Even a cursory examination of the financing market will show that there is
5 significant and growing investor interest in owning and investing in wind assets.
6 Investors include such entities as energy companies, pension funds, insurance companies,
7 the so-called “yield-cos,” and private equity funds. As I mentioned, the primary
8 requirements for investors when considering wind projects are that the facility have a
9 long term agreement with a credit worthy counterparty, and that the facility is of a high
10 quality. For both these to be true, the wind projects require a stable transmission path
11 between the facility and the customer or customers.

12 As I stated in my rebuttal testimony, the Grain Belt Express project offers the best
13 alternative for exporting reliable, inexpensive power, and the absence of the Grain Belt
14 Express project will result in wind farms facing significant technical and financial
15 challenges in developing additional wind projects.

16 **Q. Does this complete your testimony?**

17 A. Yes.

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

**IN THE MATTER OF SOUTHWESTERN)
PUBLIC SERVICE COMPANY'S)
APPLICATION FOR APPROVAL AND)
AUTHORITY TO: (1) ENTER INTO)
SEPARATE PURCHASED POWER)
AGREEMENTS WITH NEXTERA ENERGY)
RESOURCES' MAMMOTH PLAINS AND) CASE NO. 13-00233-UT
PALO DURO WIND ENERGY CENTERS)
AND INFINITY WIND POWER'S)
ROOSEVELT WIND RANCH FOR WIND)
ENERGY; AND (2) RECOVER THE)
ASSOCIATED ENERGY COSTS THROUGH)
ITS FUEL AND PURCHASED POWER COST)
ADJUSTMENT CLAUSE,)
)
SOUTHWESTERN PUBLIC SERVICE)
COMPANY,)
)
APPLICANT.)
_____)**

DIRECT TESTIMONY

of

BENNIE F. WEEKS

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY


2013 Wind RFP Bidder Summary

Bid Number	NPV - w/RECs	Levelized Cost w/RECs	NPV - wo/RECs	Levelized Cost w/o RECs	Levelized Avoided Cost	MWh	MW	Term
SPS 01	\$299.73	\$29.00	-	-	\$42.49	615,570	150	20
SPS 02 150MW	\$265.51	\$25.69	\$265.51	\$25.69	\$42.49	695,472	150	20
SPS 02 300MW	\$246.55	\$23.85	\$246.55	\$23.85	\$42.49	1,390,944	300	20
SPS 03	\$319.38	\$30.90	\$319.38	\$30.90	\$42.49	1,162,166	299	20
SPS 04	\$297.56	\$28.79	\$297.56	\$28.79	\$42.49	1,201,462	300	20
SPS 05	\$320.13	\$30.97	\$320.13	\$30.97	\$42.49	440,972	103.5	20
SPS 06 50MW	\$294.56	\$28.50	-	-	\$42.49	226,050	50	20
SPS 06 75MW	\$289.40	\$28.00	-	-	\$42.49	343,595	75	20
SPS 06 130MW	\$284.23	\$27.50	-	-	\$42.49	587,729	130	20
SPS 07	\$258.39	\$25.00	-	-	\$42.49	587,729	130	20
SPS 08 100MW	\$774.65	\$74.95	-	-	\$42.49	422,336	100	20
SPS 08 200MW	\$619.62	\$59.95	-	-	\$42.49	851,953	200	20
SPS 08 300MW	\$567.94	\$54.95	-	-	\$42.49	1,281,570	300	20
SPS 09A	\$361.97	\$35.02	\$355.94	\$34.44	\$42.49	132,200	36.8	20
SPS 09B	\$361.74	\$35.00	\$356.58	\$34.50	\$42.49	132,200	36.8	20
SPS 10	\$689.85	\$66.75	\$659.86	\$63.84	\$42.49	166,328	61.2	25
SPS 11	\$465.10	\$45.00	\$439.26	\$42.50	\$42.49	48,825	20	20
SPS 12	\$465.10	\$45.00	\$439.26	\$42.50	\$42.49	217,150	120	20
SPS 13A	\$252.70	\$24.45	-	-	\$42.49	868,501	204	20
SPS 13B	\$259.15	\$25.07	-	-	\$42.49	868,501	204	20
SPS 13C	\$255.81	\$24.75	-	-	\$42.49	868,501	204	20
SPS 13D	\$271.14	\$26.23	-	-	\$42.49	868,501	204	20
SPS 14A	\$283.71	\$27.45	-	-	\$42.49	633,782	150	20
SPS 14B	\$286.14	\$27.68	-	-	\$42.49	633,782	150	20
SPS 14C	\$290.33	\$28.09	-	-	\$42.49	633,782	150	20
SPS 15A	\$325.78	\$31.52	-	-	\$42.49	683,981	161	20
SPS 15B	\$326.21	\$31.56	-	-	\$42.49	683,981	161	20
SPS 15C	\$323.50	\$31.30	-	-	\$42.49	683,981	161	20
SPS 16	\$258.39	\$25.00	\$258.39	\$25.00	\$42.49	429,096	200	20
SPS 17	\$206.71	\$20.00	\$206.71	\$20.00	\$42.49	867,659	200	20
SPS 18	\$304.90	\$29.50	\$304.90	\$29.50	\$42.49	812,082	200	20
SPS 19 20YR	\$257.87	\$24.95	-	-	\$42.49	509,100	108.8	20
SPS 19 15YR	\$207.02	\$20.03	-	-	\$42.49	509,100	108.8	15
SPS 20 150MW	\$276.48	\$26.75	\$255.81	\$24.75	\$42.49	633,817	149.5	20
SPS 20 250MW	\$268.72	\$26.00	\$248.05	\$24.00	\$42.49	633,817	149.5	20
SPS 21	\$315.36	\$30.51	\$277.69	\$26.87	\$42.49	926,569	199.5	20
SPS 22A	\$238.75	\$23.10	\$227.90	\$22.05	\$42.49	1,043,450	199	20
SPS 22B	\$241.75	\$23.39	\$229.15	\$22.17	\$42.49	1,043,450	199	20
SPS 23A	\$286.29	\$27.70	\$275.44	\$26.65	\$42.49	500,732	100	20
SPS 23B	\$292.38	\$28.29	\$279.78	\$27.07	\$42.49	500,732	100	20
SPS 24A	\$239.27	\$23.15	\$228.42	\$22.10	\$42.49	999,657	199	20
SPS 24B	\$242.71	\$23.48	\$230.11	\$22.26	\$42.49	999,657	199	20
SPS 25	\$256.85	\$24.85	\$246.00	\$23.80	\$42.49	1,420,578	299	20
SPS 26A	\$318.85	\$30.85	\$308.00	\$29.80	\$42.49	281,704	49.3	20
SPS 26B	\$317.45	\$30.71	\$304.86	\$29.50	\$42.49	281,704	49.3	20
SPS 27 10YR	\$291.12	\$28.17	\$267.93	\$25.92	\$42.49	379,640	114	10
SPS 27 15YR	\$309.11	\$29.91	\$276.98	\$26.80	\$42.49	379,640	114	15
SPS 28	\$242.34	\$23.45	\$242.34	\$23.45	\$42.49	888,270	200	15
SPS 29	\$305.34	\$29.54	\$305.34	\$29.54	\$42.49	453,400	100	20
SPS 30	\$263.94	\$25.54	\$263.94	\$25.54	\$42.49	875,000	199	20
SPS 31	\$384.51	\$37.20	-	-	\$42.49	180,000	51	15

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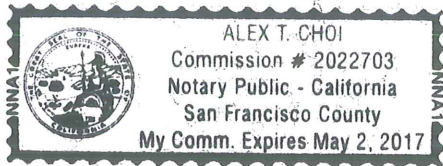
STATE OF CALIFORNIA)
)
) ss
COUNTY OF ~~SANTA BARBARA~~ SAN FRANCISCO)

I, Matt Langley, upon oath first duly sworn, state that I am Director of Business Development of Infinity Wind Power, that I am authorized to make this Affidavit on behalf of Infinity Wind Power, that I have prepared the foregoing *Cross-Surrebuttal Testimony*, and that the statements contained therein are true and correct to the best of my knowledge and belief.



Matt Langley
Director of Business Development
Infinity Wind Power

Subscribed and sworn to before me this 14th day of October, 2014.





Notary Public

My appointment expires: 5-2-2017