

Exhibit No.: _____
Issue(s): High Prairie Renewable Energy Center
Witness/Type of Exhibit: Payne/Direct
Sponsoring Party: Public Counsel
Case No.: ER-2024-0319

DIRECT TESTIMONY

OF

MANZELL PAYNE

Submitted on Behalf of the Office of the Public Counsel

UNION ELECTRIC COMPANY
D/B/A AMEREN MISSOURI

CASE NO. ER-2024-0319

December 3, 2024

DIRECT TESTIMONY
OF
MANZELL M PAYNE
UNION ELECTRIC COMPANY
D/B/A AMEREN MISSOURI
CASE NO. ER-2024-0319

1 **Q. Please state your name, title, and business address.**

2 A. Manzell Payne, Utility Regulatory Auditor, Office of the Public Counsel (“OPC” or “Public
3 Counsel”), P.O. Box 2230, Jefferson City, Missouri 65102.

4 **Q. What are your qualifications and experience?**

5 A. My educational background includes a Bachelor of Arts degree in Accounting from
6 Westminster College in Fulton, Missouri received in 2020.

7 Prior to joining the Office of Public Counsel in July 2023, I worked as an analyst and
8 auditor in the banking industry for four and half years. My responsibilities during my time
9 as an analyst included risk analysis, tracking/monitoring expenditures, auditing of business
10 financial statements and business plans. Through my various analysis and auditing work in
11 the banking industry, I had the opportunity to review an individual or company’s credit
12 worthiness.

13 Since joining the OPC, I have attended the National Association of Regulatory Utility
14 Commissioners (“NARUC”) Rate School and other seminars and trainings relating to
15 utility regulation.

16 **Q. Have you testified previously before the Missouri Public Service Commission?**

17 A. Yes, I have previously testified before the Missouri Public Service Commission
18 (“Commission”). Please refer to schedule MMP-D-1 attached hereto for a list of cases in
19 which I have testified.

20 **Q. What is the purpose of your direct testimony?**

21 A. The purpose of my direct testimony is to address the High Prairie Renewable Energy Center
22 (“High Prairie”) as it relates to Union Electric Company D/B/A Ameren Missouri
23 (“Company”).
24

1 **HIGH PRAIRIE RENEWABLE ENERGY CENTER**

2 **Q. What is the High Prairie Renewable Energy Center?**

3 A. The High Prairie Renewable Energy Center is a wind generation facility Ameren Missouri
4 acquired in December 2020. Ameren Missouri owns and operates High Prairie. It has a 400-
5 megawatt (MW) nameplate capacity. It is located in Northeast Missouri in Adair and Schuyler
6 Counties and has 175 wind turbines.

7 **Q. Is Ameren Missouri's High Prairie Renewable Energy Center operating at full capacity**
8 **at all-times?**

9 A. No, it has not been operating at full capacity since Ameren Missouri took ownership in
10 December 2020. Since that time, the facility has faced different operational problems that
11 have limited its operational capacity.

12 **Q. Please describe the operational problems that the High Prairie Renewable Energy**
13 **Center has faced since December 2020.**

14 A. High Prairie has come across various difficulties that have hindered its operations and thus
15 caused it to underperform. Such difficulties include the death of birds and bats, some of which
16 are endangered or protected species, it has also encountered the collapse of three different
17 wind turbines. These difficulties have resulted in the High Prairie Renewable Energy Center
18 curtailing operations at various times.

19 On April 29, 2024, Ameren Missouri's High Prairie Renewable Energy Center began to have
20 problems with wind turbines collapsing. On that day, the first of three collapses occurred, as
21 shown in Figure 1. The second wind turbine collapsed on August 25th, 2024, approximately
22 four months later and is shown in Figure 2. As shown in Figure 3, the third collapse happened
23 approximately one month ago, on October 31st, 2024.

24 Ameren Missouri ceased operations at High Prairie to determine the cause of the collapses
25 after each turbine fell. During these curtailments, the facility was also still curtailing
26 operations at nighttime for the 2024 bat season. As of November 18th, it seems as if the facility
27 is still not fully operational.¹

¹ The timeline for the collapsed turbine and the outages can be found in the response to OPC Data Request No. 2024. Attached as MMP-D-5.

1 Figure 1: High Prairie Renewable Energy Center – 1st Wind Turbine to collapse April 29th, 2024.²



2

3 Figure 2: High Prairie Renewable Energy Center – 2nd Wind Turbine to collapse August 25th, 2024.³



4

² Photo taken from KCTO news report on April 28th, 2024. <https://ktvo.com/news/local/wind-turbine-down-in-schuyler-county-amerens-responds>

³ Photo taken from KCTO news report on August 25th, 2024. <https://ktvo.com/news/local/wind-turbine-collapses-in-schuyler-county-sunday-morning>

1 Figure 3: High Prairie Renewable Energy Center – 3rd Wind Turbine to collapse October 31st, 2024.⁴



2
3 **Q. Have the operational issues at the High Prairie Renewable Energy Center due to the**
4 **death of threatened or endangered species been brought to the Commission before?**

5 A. Yes. In Case Nos. ER-2021-0240 and ER-2022-0337, the issue was raised by OPC Witness,
6 Dr. Geoff Marke. In each of those cases, the issue was not explicitly resolved, as both cases
7 concluded under a black box settlement.

8 **Q. How many animal deaths or “incidental takes” have occurred at Ameren Missouri’s**
9 **High Prairie Renewable Energy Center since it began operating?**

10 A. The High Prairie Renewable Energy Center has had the following “incidental takes” or deaths
11 of protected and endangered species in 2020, 2021, 2022, 2023, and 2024⁵:

⁴ Photo taken from KCTO news report on October 31st, 2024. <https://ktvo.com/news/local/another-turbine-collapses-in-schuyler-county-ameren-to-investigate>

⁵ The information on animal deaths at the High Prairie Renewable Energy Center was provided by the Company in OPC Data Request No. 2023. Attached as Schedule MMP-D-4.

1
 2
 3
 4
 5

- **2020: Table 3-1 from the Annual Report (2020 High Prairie Wind Farm PCM_01-13-2020.pdf)**

Table 3-1. Summary of all bat carcasses found during standardized carcass surveys during the 2020 post-construction monitoring study at the High Prairie Wind Farm in Schuyler and Adair counties, Missouri.

Species	Standard Searches		Incidental		Total	
	Number found	Percent	Number found	Percent	Number found	Percent
Silver-haired bat	2	50%	3	75%	5	62.5%
Evening Bat	1	25%	0	0%	1	12.5%
Indiana bat	1	25%	0	0%	1	12.5%
Hoary Bat	0	0%	1	25%	1	12.5%
Total	4	100%	4	100%	8	100%

6

- **2021: Table 3-2 from the Annual Report (High Prairie PCM Report_03-01-2022.pdf).**

Table 3-2. Summary of all bat carcasses found during standardized carcass searches between April 1 and October 31, 2021, during post-construction monitoring at the High Prairie Renewable Energy Center, Schuyler and Adair Counties, Missouri.

Species (state/federal status)	Count (species composition)			
	Spring	Summer	Fall	Total
Evening Bat	0	54 (34.4%)	2 (15.4%)	56 (32.4%)
Hoary Bat (SOCC ¹)	0	36 (22.9%)	0	36 (20.8%)
Eastern Red Bat	1 (33.3%)	19 (12.1%)	7 (53.8%)	27 (15.6%)
Silver-haired Bat (SOCC)	1 (33.3%)	19 (12.1%)	3 (23.1%)	23 (13.3%)
Big Brown Bat	0	20 (12.7%)	1 (7.7%)	21 (12.1%)
Indiana Bat (Covered Species, state & federally endangered, SOCC)	1 (33.3%)	6 (3.8%)	0	7 (4.0%)
Little Brown Bat (Covered Species, SOCC)	0	1 (0.6%)	0	1 (0.6%)
Tricolored Bat (SOCC)	0	1 (0.6%)	0	1 (0.6%)
Unknown (not Myotis)	0	1 (0.6%)	0	1 (0.6%)
Northern long-eared Bat (Covered Species, state endangered, federally threatened, SOCC)	0	0	0	0
Total	3 (100%)	157 (100%)	13 (100%)	173 (100%)

¹Species of Conservation Concern (MDC)

6

1

- **2022: Section 3.1 from the Annual Report (High Prairie PCM Report_12-15-2022.pdf).**

2

3.1.2 Species Composition

No bats were found during standardized post-construction monitoring. One juvenile male big brown bat was found incidentally on July 23, 2022, at Turbine L-09.

3

- **2023: Table 3-2 from the Annual Report (High Prairie PCM Report_12132023.pdf).**

Table 3-2. Summary of all bat carcasses found during standardized carcass searches between April 1 and October 31, 2023, during post-construction monitoring at the High Prairie Renewable Energy Center, Schuyler and Adair Counties, Missouri.

Species (state/federal status)	Count (species composition)			
	Spring	Summer	Fall	Total
Big Brown Bat	0	2 (33.3%)	0	2 (12.5%)
Eastern Red Bat	0	0	5 (71.4%)	5 (31.3%)
Evening Bat	0	2 (33.3%)	1 (14.3%)	3 (18.8%)
Hoary Bat (SOCC)	0	1 (16.7%)	0	1 (6.3%)
Indiana Bat (Covered Species, SE, FE, SOCC)	0	0	1 (14.3%)	1 (6.3%)

Species (state/federal status)	Count (species composition)			
	Spring	Summer	Fall	Total
Silver-haired Bat (SOCC)	3 (100%)	0	0	3 (18.8%)
Unknown	0	1 (16.7%)	0	1 (6.3%)
Total	3 (100%)	6 (100%)	7 (100%)	16 (100%)

Key
 SOCC = Species of Conservation Concern (state)
 SE = state-endangered
 FE = federally-endangered

- **2024:** Per the Company’s response to Data Request No. 2023, “Preliminary information is being processed and reviewed for the 2024 season. A table similar to other monitoring years will be provided in the Annual Report, which is due to the U.S. Fish and Wildlife Service on 12-15-24.”

Q. From excerpts above, what is the total number of incidental takes that have occurred at Ameren Missouri’s High Prairie Renewable Energy Center since it began operating?

A. From the tables above, the total number of bat deaths was 198.

Q. Are you confident that the numbers above accurately represent all bat deaths that have occurred at the High Prairie Renewable Energy Center?

A. No. It is not reasonable to expect that all bat carcasses would be collected from the 60,000-acre wind farm.

Also, the total number for 2024 is unknown at this time, as the Company will not have the final number until December 15, 2024.

1 **Q. Has the Company taken any mitigation steps at the facility for incidental bat takes?**

2 A. Yes, it has curtailed the facility at nighttime for certain parts of the year and engaged in
3 additional mitigation efforts.

4 **Q. What additional mitigation efforts has Ameren Missouri taken to minimize bat and bird
5 deaths caused by the wind turbines at High Prairie?**

6 A. In response to Staff data request, No. 0390, Ameren Missouri detailed its efforts to mitigate
7 the deaths of various bats and birds. The Company's response to Data Request No. 0390 was:

8 Required mitigation efforts that Ameren Missouri has implemented at the
9 [High Prairie Renewable Energy Center ("HPREC")] include implementation
10 of minimum turbine wind cut-in speeds, as well as purchasing mitigation
11 credits from a mitigation bank. Ameren Missouri purchased (prior to permit
12 issuance) 217 credits from the Chariton Hills Conservation Bank, an USFWS-
13 approved conservation bank to offset the permitted levels of take of the
14 covered species.

15 Other voluntary mitigation efforts that Ameren Missouri has implemented at
16 the HPREC include the use of pre-construction survey information to site
17 turbines, including siting turbines at least 1-mile away from known eagle
18 nests; use of tubular towers to decrease roosting locations; burying collection
19 lines underground to decrease risk of electrocution; providing required
20 training to employees and contractors in identifying and responding to
21 encounters with sensitive resources, including eagles; a speed limit of 15 mph
22 enforced on access roads; and reducing potential eagle attractants by removing
23 roadkill, contacting landowners about livestock disposal, and storing trash in
24 covered containers to eliminate attractants to sensitive species.

25 Ameren Missouri has also been evaluating several bat mortality minimization
26 technologies at the HPREC. These include the following:

- 27 • Bat Acoustic Deterrent Technology
- 28 • Bat Acoustic Smart Curtailment Technology (EchoSense)
- 29 • Model Curtailment Technology

1 All three technologies were procured and implemented in 2022. The deterrent
2 technology was installed on 15 turbines and is still in operation at the site. This
3 technology utilizes speakers mounted on the turbine to emit ultrasound that is
4 unfavorable to bats, thereby deterring them from flying near the system.
5 Significant testing on this technology was performed. The technology yielded
6 positive results but was not significant enough to warrant additional
7 implementation.

8 The model curtailment technology utilizes algorithm-based solutions to allow
9 turbine operation at times associated with low or no bat presence. In short,
10 Ameren Missouri worked with a consultant to capture site data (acoustic
11 information from bats present on the landscape, meteorological information,
12 etc.) for multiple years (2022 – present). This information is then used to
13 develop a bat-season model that provides information on when bats are most
14 likely to be or not be present at locations near the turbines at HPREC.
15 Although this technology could at some point be used to help control turbine
16 operation, it is presently being used in conjunction with the other technologies
17 to help inform conservative operations at the site.

18 The EchoSense technology is currently in-use at the site and is yielding the
19 most positive results. This technology utilizes microphones at select turbines
20 to listen for bat echolocation sounds and automatically shuts down turbines
21 in areas where bats are present. Ameren Missouri has been and continues to
22 work with the vender (Natural Power) to improve the technology and test the
23 effectiveness over more and more turbine locations in a systematic and
24 conservative methodology.⁶

⁶ Response to Staff Data Response No. 0390. Attached as Schedule MMP-D-6.

1 **Q. Turning to the turbine collapses, what has been Ameren Missouri's explanation**
2 **regarding the cause of the collapse of each wind turbine at the High Prairie Renewable**
3 **Energy Center?**

4 A. In response to OPC Data Request No. 2020 on November 18th, Ameren Missouri explained
5 the cause of the collapse of each wind turbine as:

6 While the investigations of these events remain ongoing, initial reviews
7 indicate that the wind turbine collapse on April 27 involved the tower structure
8 itself. The wind turbine collapses on August 25 and October 31 were preceded
9 by an apparent blade failure.⁷

10 **Q. Is it normal for wind turbines to collapse?**

11 A. No. It is very unusual for wind turbines to collapse, and it is also very unusual for three
12 different wind turbines to have collapsed within a six-month period.

13 **Q. What has been Ameren Missouri's response to who will pay for the collapsed wind**
14 **turbines?**

15 A. At this time the wind turbines are insured through Ameren's Property insurance program. The
16 current timeline for who will pay for the collapsed wind turbines is unknown. Ameren has
17 responded to OPC Data Request No. 2021 that:

18 Wind turbine incidents for High Prairie units G-08, B-11, and C-12 have been
19 reported as claims under Ameren's Property insurance program. Each event
20 has a 2,000,000 deductible. A coverage determination has not been made by
21 the claims adjuster yet as root cause analyses are still pending. Also, warranty
22 claims with the Manufacturer are still under review. Insurance would be
23 secondary if we are unable to recover under contractual obligations from the
24 Manufacturer.⁸

⁷ Ameren Missouri's response to OPC Data Request No. 2020. Attached as Schedule MMP-D-2.

⁸ Response to OPC Data Request No. 2021 is attached as MMP-D-3.

1 **Q. Should customers have to pay for any costs due to the collapsed wind turbines at Ameren**
2 **Missouri's High Prairie Renewable Energy Center?**

3 A. Customers are already paying for a sporadically operated facility. It is not fair or reasonable
4 for Ameren Missouri's customers to pay for any costs associated with the collapsed wind
5 turbines. Since the Company has submitted claims to their insurance provider and it also has
6 warranty claims under review, each wind turbine should be paid through those means. Any
7 additional costs that are not covered, should be paid by Ameren Missouri and/or their
8 shareholders.

9 **Q. Due to these operational issues is High Prairie fully operational 100% of the time?**

10 A. No, as explained above, Ameren Missouri's High Prairie Renewable Energy Center has not
11 been fully operational 100% of the time. Although the Company has begun to run at least
12 some amount of wind turbines at night during the bat season, it has not operated all 175 wind
13 turbines at night during the bat season. In addition to the nighttime curtailments, with the
14 collapse of the wind turbines in 2024, the facility had to curtail daytime and nighttime
15 operations.

16 **Q. Since 2020, what dates has the High Prairie Renewable Energy Center had curtailment**
17 **restrictions in place for bat mitigation or due to collapsed wind turbines?**

18 A. From Ameren Missouri's response to OPC Data Request No. 2024, the High Prairie
19 Renewable Energy Center has had the following curtailments in 2022, 2023, and 2024:

- 20 • 2022: For 2022, please refer to Table 1-1 from the Annual Report (High Prairie
21 PCM Report_12-15-2022.pdf – previously provided). The turbines that were
22 operating were at 8.0 m/s + EchoSense at night.

During the monitoring period, 1-10 of the turbines operated on select nights under limited nighttime operations, which is summarized below in Table 1-1 and shown on Figure 1.

Table 1-1. Summary of operational protocols (from 45 minutes before sunset to 45 minutes after sunrise) from April 1 through October 31, 2022, at the High Prairie Renewable Energy Center, Schuyler and Adair Counties, Missouri.

Date(s)	Number of Turbines Operating	Number of Turbines Not Operating at Night
April 1 – August 9	0	175
August 10 – August 27	1	174
August 28 – September 18	0	175
September 19 – September 29	5	170
September 30 – October 11	0	175
October 12 – October 16	5	170
October 17 – October 31	10	165

1
 2
 3

- 2023: For 2023, please refer to Table 1-1 from the Annual Report (High Prairie PCM Report_12122023.pdf)

Table 1-1. Summary of nighttime operations from April 1 through October 31, 2023, at the High Prairie Renewable Energy Center, Schuyler and Adair Counties, Missouri.

Date(s)	Number of Turbines Operating	Number of Turbines Not Operating at Night	Curtailment
April 1 – April 23	20	155	8.0 m/s + EchoSense
April 24 – September 17	32	143	8.0 m/s + EchoSense
September 18 – September 25	50	125	8.0 m/s + EchoSense
September 26 - October 31	0	175	No nighttime operations

4

- 2024:

Table 1. Summary of nighttime operations at the High Prairie Renewable Energy Center, Adair and Schuyler counties, Missouri, during the spring and summer monitoring seasons (April 1 – August 15, 2024).

Season	Date Range	Number of Turbines Operating at Night	Number of Turbines Not Operating at Night
Spring	April 1 – April 27	50	125
	April 28 – May 14	0	174
	May 15	0	174
Summer	May 16 – May 28	50	124
	May 29 – June 2	75	99
	June 3 – June 9	78 ¹	96
	June 10	0	174
	June 11 – August 15	48	126

¹: Three turbines (E-10, E-11, H-07) were operating at night but were not searched due to unanticipated access constraints. These turbines operated from May 29-June 9 only since access constraints are still ongoing.

Season	Date Range	Number of Turbines Operating at Night	Number of Turbines Not Operating at Night
Fall	August 16 – August 25	48	126
	August 25 – October 31	0	173

The Table above serves as a summary of fall operations at High Prairie. The site was curtailed on August 25th due to a turbine collapse. The site remained curtailed during nighttime hours for the rest of the 2024 bat season due to this issue.

During 2022 and 2023 there were no periods of daytime curtailment outside of routine scheduled and unscheduled site maintenance.

During 2024 there were periods of daytime curtailment that were related to the turbine collapses on site. Following the collapse of High Prairie wind turbine G-08, the site was fully stopped from April 28 – May 16. Following the collapse of High Prairie wind turbine B-11, the site was fully stopped on August 25. Twelve wind turbines were restarted on August 30, and full operations returned to the remainder of the site on September 10. Following

1 the collapse of High Prairie wind turbine C-12, the site was fully stopped on
2 October 31. Twelve wind turbines were restarted on November 5.⁹

3 **Q. What has been the result of ceased operations of the High Prairie Renewable Energy**
4 **Center?**

5 A. The results have been loss of revenues, loss of Production Tax Credits (“PTCs”), and the loss
6 of Renewable Tax Credits (“RECs”). These losses have resulted in fewer benefits for Ameren
7 Missouri’s captive rate payers. The loss revenues and the PTCs are not flowing through the
8 Fuel Adjustment Clause (“FAC”) or the Renewable Energy Standard Rate Adjustment
9 Mechanism (“RESRAM”) to create a benefit to customers.

10 **Q. Who benefits from the Company having the High Prairie Renewable Energy Center not**
11 **operating 100% of the time?**

12 A. I cannot think of anyone that benefits from High Prairie having continued curtailments.
13 Customers do not benefit. The customer is paying for a wind farm facility that has had
14 problems since Ameren Missouri took ownership. The continued nighttime curtailments for
15 bat mitigation and now the collapsed wind turbines have left Ameren Missouri’s customers
16 with a facility that is inoperable for many parts of the year. With the facility continuing to
17 have bat deaths, any punitive measures taken against Ameren Missouri remain uncertain. The
18 amount of additional wind turbines that may collapse also remains uncertain.

19 **Q. Is it normal for a wind farm to not operate during parts of the year?**

20 A. No. It is unusual for a wind farm to be intentionally non-operational for extended periods in a
21 year. Outside of temporary shutdowns that occur due to maintenance, extreme weather
22 conditions, and regulatory requirements, a wind farm should not have prolonged periods
23 operational down times.

⁹ Ameren Missouri’s response to OPC Data Request No. 2024. Attached as MMP-D-5.

1 **Q. What percentage of the year 2023 do you believe High Prairie was nonoperational for**
2 **due to nighttime curtailments for bat mitigation?**

3 A. During 2023, I estimate that High Prairie did not operate for 25%¹⁰ of the year due to the
4 nighttime curtailments.

5 **Q. What percentage of the year 2024 do you believe High Prairie was nonoperational for**
6 **due to nighttime curtailments for bat mitigation and daytime curtailments for the three**
7 **collapsed wind turbines?**

8 A. During 2024, I estimate that High Prairie did not operate for 38%¹¹ of the time through
9 November 18, 2024¹² due to the nighttime curtailments and the curtailments for the collapsed
10 wind turbines.

11 **Q. Given the above-mentioned situations, what do you recommend that the Commission**
12 **do?**

13 A. I recommend that the Commission remove 25% to 38% of Ameren Missouri's costs related
14 to the High Prairie Renewable Energy Center from Ameren Missouri's revenue requirement
15 in this case. This would account for the fact that High Prairie was non-operational for 25%
16 of the time in 2023 and 38% of the time from January 1st to November 18th in 2024.

17 **Q. Is your argument a prudence argument or a "Used and Useful" argument?**

18 A. To be clear, my argument is not a prudence argument, as I have not argued the prudence of
19 Ameren Missouri's acquisition or the limited continued operations of the facility. My
20 argument is strictly based on the used and useful standard to ensure that Ameren Missouri's
21 captive ratepayers are getting safe and adequate service at "just and reasonable" rates. High
22 Prairie is sporadically used over the year from the bat season curtailments and curtailments
23 associated with the fallen wind turbines. The facility is not used and useful at all times of the
24 year, meaning customers should not have to pay for 100% of the facility.

¹⁰ The calculation for estimated downtime can be found in my workpaper labeled MMP-D-8 – High Prairie Outage Calculation.

¹¹ The calculation for estimated downtime can be found in my workpaper labeled MMP-D-8 – High Prairie Outage Calculation.

¹² Ameren Missouri's response to OPC Data Request No. 2024 was on this date.

1 **Q. Does this conclude your direct testimony?**

2 A. Yes it does.

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

In the Matter of Union Electric Company d/b/a)
Ameren Missouri's Tariffs to Adjust Its) Case No. ER-2024-0319
Revenues for Electric Service)

AFFIDAVIT OF MANZELL PAYNE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

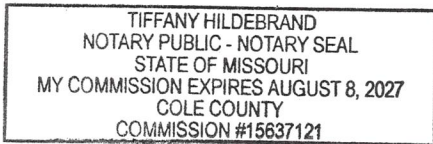
Manzell Payne, of lawful age and being first duly sworn, deposes and states:

1. My name is Manzell Payne. I am a Utility Regulatory Auditor for the Office of the Public Counsel.
2. Attached hereto and made a part hereof for all purposes is my direct testimony.
3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.




Manzell Payne
Utility Regulatory Auditor

Subscribed and sworn to me this 2nd day of December 2024.



My Commission expires August 8, 2027.



Tiffany Hildebrand
Notary Public