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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2022-0337

REBUTTAL TESTIMONY

OF

AJAY K. ARORA

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

St. Louis, Missouri
February, 2023

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REBUTTAL TESTIMONY

OF

AJAY K. ARORA

FILE NO. ER-2022-0337

I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is Ajay K. Arora. My business address is One Ameren Plaza, 1901 Chouteau Ave., St. Louis, Missouri.

Q. By whom are you employed and what is your position?

A. I am the Senior Vice President and Chief Renewable Development Officer for Ameren Missouri.

Q. Please describe your educational background and employment experience.

A. I received my Bachelor of Science Degree in Chemical Engineering from Panjab University (India) in May 1992. I received my Master of Business Administration degree from Tulane University in May 1998. I joined former Ameren Corporation subsidiary, Ameren Energy, in June 1998 and held trading and structuring positions in Ameren Energy before supervising the group that priced structured energy products for former Ameren Corporation subsidiary Ameren Energy Marketing Company's wholesale and retail customers from 2002 to 2004. From 2004 to 2007, I was responsible for the analytical group supporting Ameren Missouri's transition into the Midwest Independent Transmission System Operator, Inc. ("MISO"), including reviewing specific market design

issues in MISO.[1] In 2007, I led the Ameren Missouri Regional Transmission Organization cost-benefit study that was filed with the Missouri Public Service Commission ("Commission") in File No. EO-2008-0134, and I assumed responsibility for the Quantitative Analysis, Integrated Resource Planning, Load Analysis, and Operations Analysis groups. In January 2008, as part of my role as Director of Corporate Planning, I assumed the additional responsibility for the Asset and Trading Optimization group supporting Ameren Missouri. In November 2011, I assumed additional responsibilities for the corporate Project Management Oversight and Market Risk Management groups. These groups oversee large utility capital projects and commodity risk management. In November 2014, I assumed responsibility for the Environmental Services department as Vice President of Environmental Services and Generation Resource Planning. The Environmental Services department develops environmental policy and provides environmental compliance support, which includes the areas of energy delivery, generation, and transmission. In March 2018, I assumed leadership responsibility for Ameren Missouri's entire non-nuclear generation operations and energy management function as Vice President of Power Operations and Energy Management. I assumed the position of Vice President and Chief Renewable Development Officer in December 2020. I was promoted in September 2022 to Sr. Vice President and Chief Renewable Development Officer.

Q. What are your responsibilities in your current position?

A. In my current role, my focus is on implementing Ameren Missouri's transformational generation plan incorporating cleaner energy sources. This includes

[1] MISO is now known as the Midcontinent Independent System Operator, Inc.

providing leadership, oversight and coordination of generation resource planning including renewable energy resource and energy storage development, as well as construction, and providing thought leadership on renewable energy policy at the federal, state and local levels; and strategic planning for all renewable energy and environmental matters. I also continue to lead the Ameren Missouri environmental services team associated with the operation and maintenance of energy centers and the energy delivery system.

Q. To what testimony or issues are you responding?

A. I am responding to direct testimony filed by Office of the Public Counsel ("OPC") witness Dr. Geoffrey Marke regarding his proposal on the ratemaking treatment of a portion of the Company's investment in the High Prairie Energy Center ("High Prairie") wind generation facility. Specifically, I will outline why the Missouri Public Service Commission ("Commission") should reject Dr. Marke's proposal, both because it is substantively flawed and because it is in direct conflict with the commitments OPC made (and with which OPC was ordered by the Commission to comply) when OPC became a signatory to the stipulation and agreement that was approved by the Commission when it issued a Certificate of Convenience and Necessity ("CCN") for High Prairie.[2] There can be no doubt that the "real" basis of Dr. Marke's arguments is that he is claiming the Company was imprudent for building High Prairie. This is clearly shown by his reference to "[p]roperly sited" wind farms, which obviously implies that the High Prairie facility was not "properly sited."[3] I am also

[2] File No. EA-2018-0202, *Third Stipulation and Agreement* (EFIS Item No. 92) (the "CCN Stipulation"), dated October 12, 2018, approved by the Commission in its *Order Approving Third Stipulation and Agreement,* issued October 24, 2018 (EFIS Item No. 101).

[3] Geoff Marke Rebuttal, p. 13, l. 20. In his Direct Testimony on the High Prairie issue in File No. ER-2021-0241 (page 10, ll. 9-10), Dr. Marke out and out claimed that the Company made "poor managerial decisions to site [High Prairie] where it did."

responding to direct testimony filed by Staff witness Claire Eubanks' completely unsupported recommendation that the Commission reduce the Company's revenue requirement in this case by approximately $29 million simply because the facility is currently operating at a lower net capacity factor than it otherwise would, due to bat mitigation efforts at the facility,[4] which I discuss in detail below. While Dr. Marke at least makes some attempt to provide a rationale for his recommendation to exclude approximately 29% of the Company's investment in High Prairie from rate base, Staff simply recites facts, alleges no imprudence, and matter-of-factly says adjust the Company's revenue requirement by imputing phantom revenues that it isn't getting because (Staff gives no other reason) this will lower customer costs.[5]

Q. Please summarize your testimony.

A. Neither Dr. Marke nor Staff witness Eubanks provide any substantive evidence that supports a conclusion that the Company has acted imprudently, either in contracting to acquire High Prairie from the project developer (as it was authorized to do by the Commission in the CCN docket), or in operating the facility since it acquired it in late 2020. For that reason, alone, their proposals are inappropriate and the Commission should summarily reject them. The Company has made a prudent investment that is being used to serve its customers and support compliance with the Missouri Renewable Energy Standard ("RES") and is entitled to continue to have its costs associated with that investment reflected in the revenue requirement used to set its rates, and without imputation of phantom revenues it has not received due to lower than hoped production at the facility during the test year, which in effect denies full revenue requirement recovery arising from High Prairie's operations.

[4] File No. ER-2022-0337, Claire M. Eubanks Direct Testimony, p.2-8, January 10, 2023.
[5] Staff should also not be allowed to, in effect, make an end run around its commitments in the CCN Stipulation since adopting Staff's adjustment would impact the Company in the same way an alleged prudence adjustment – which Staff committed not to recommend – would.

The question should be, and is, whether the Company was prudent in agreeing to construct the project via the Build Transfer Agreement ("BTA") in evidence in the CCN case. That question can and should only be judged by what the Company knew or reasonably should have known at the time it signed the BTA, as discussed in detail in Company witness John Reed's rebuttal testimony. It is true that with hindsight it appears that endangered Indiana bats could not be fully avoided, as was expected at the time, using a minimum cut-in speed of 6.9 meters per second ("m/s"), and that this has required mitigation measures which reduced production at night during the past two years during the warmer months of the year. However, it is also true that these after-the-fact circumstances are not relevant to the ratemaking treatment of the Company's investment in High Prairie.

All the evidence known and available to the Company at the time it signed the BTA indicated that there would be some level of production curtailment at night during the warmer months due to the presence of endangered Indiana bats at or near the facility.[6] Such evidence was provided to and known by the parties (OPC and Staff included) and the Commission in the CCN docket. Specifically, that evidence indicated that at night during those months the facility would have to operate at a cut-in speed above the design capability of the turbines (3.0 m/s or more). The evidence also indicated that the facility might have to operate at night at a cut-in speed of 6.9 m/s during those months to allow it to achieve full avoidance of Indiana bats when operating the facility at night during warmer months. It was on this basis that the Company made the decision to acquire the facility. Indeed, the Company's modeling submitted to the Commission and the parties in the context of that case reflected production levels that were lower than the facility would be capable of producing absent the need for curtailment to protect

[6] From April 1 to October 31, at night when temperatures exceeded 50 degrees.

the Indiana bats, including curtailment using the then-understood worst-case scenario of operations with a cut-in speed of 6.9 m/s at night during warmer months. While the primary justification for the project was its need for RES compliance, as compared to pursuing the project to produce net economic benefits for customers, the unrefuted evidence in the CCN docket was even if full mitigation (operation at night April to October using a 6.9 m/s cut-in speed) was required and even if power prices were low, the facility was expected to generate positive economic benefits for customers over its life on a net present value basis.

There are a variety of other reasons entering into the BTA was prudent, including the unavailability of other Missouri projects eligible to capture 100% of the available Production Tax Credits ("PTCs"), to take advantage of the 1.25 multiplier under the RES for Missouri projects, and the economic benefits to the state of Missouri from utilizing a Missouri project for RES compliance.

The entire facility is fully in-service and producing power 365 days per year, seven days per week. That production is providing Renewable Energy Credits ("RECs") that are being used for RES compliance, generating PTCs that are being passed back to customers, and generating energy and capacity revenues also being credited to customers in rates via the RESRAM,[7] also approved by the Commission in the CCN docket.

[7] Renewable Energy Standard Rate Adjustment Mechanism.

II. THE PERTINENT FACTS

Q. Please explain the facts relating to High Prairie operations and the presence of the endangered Indiana bat.

A. The record in the CCN case demonstrated that it was well understood when the project was being developed, and when the Company executed the BTA committing it to buy the facility (subject to Commission approval of a CCN), and when the parties signed the CCN Stipulation, and when the Commission approved the CCN, that Indiana bats nested in trees near the site of the facility. Dr. Marke also recites this fact in his Direct Testimony, and further references the concern that he expressed in that docket about the location of the bat habitats relative to the project. What he does not mention in his Direct Testimony is that he expressed that concern about the proximity to the endangered bats (i.e., the "siting" of the facility) in the CCN case prior to the time when OPC eventually signed a Stipulation and Agreement recommending approval of the CCN, which also bound the OPC not to challenge the prudence of the decision. This is as clear of an indication as I can imagine existing that OPC did not believe, based on the information at that time – which included their knowledge of the potential for wildlife-related issues – that acquiring the facility was imprudent.

It was also well understood that migration of the bats from a large hibernaculum (here, an abandoned kiln-lime quarry/mine) near Hannibal meant such bats would fly at night in the warmer months at or near the site. This is exactly why the BTA called for the project developer to apply for and ultimately obtain an Incidental Take Permit ("ITP") from the United States Fish and Wildlife Service ("USFWS").[8] That permit would allow the facility to take, incidental to its otherwise lawful operation of the wind facility, Indiana bats without experiencing adverse

[8] As discussed below, the ITP works in concert with a Habitat Conservation Plan ("HCP") agreed upon with USFWS.

enforcement actions under the federal Endangered Species Act ("ESA"). **_____
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Q. What was the significance of the **_____?**

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Q. Is that one of the cases the Company modeled and presented to the Commission?

A. Yes, as noted above, the Company modeled the case where the cut-in speed at night during the entire life of the facility would need to be 6.9 m/s during those hours using three different power price scenarios; low, probability-weighted average, and high (all from its 2017 Integrated Resource Plan ("IRP")). In each case, the facility was expected to lower the Net

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Present Value of Revenue Requirements ("NPVRR") for customers over its life. In fact, the modeling did not "take credit" for the $20 million purchase price reduction that the developer would have paid, meaning the NPVRR results in this worst-case would have somewhat understated the reduction in revenue requirement, even if this worst-case was expected at the time the decision was made. And while it is absolutely true that all modeling suggested the operation of the facility would lower the NPVRR, given the Company's need for RECs to meet its RES compliance obligations, reducing the NPVRR was not a necessary condition for the Company to establish the need for the facility, or the prudence of acquiring it.

Q. You noted that USFWS issued the ITP. How did its issuance come about?

A. In broad terms, its issuance was the product of a process that started with detailed conservation studies conducted before we signed the BTA, specifically including studies of Indiana bats in the area and studies of other species as well. Consultations and discussions between the developer and USFWS had also started well before the BTA was signed. In fact, Ameren Missouri participated in discussions with the developer and USFWS starting in late December 2017 and continuing into early 2018, before the BTA was signed (on April 6, 2018). As provided for by the BTA, Ameren Missouri continued to participate in the discussions with USFWS, along with the developer, from that time until issuance of the ITP in May 2021. A central topic of those discussions centered on the exact terms that would be appropriate for the facility under the companion HCP.

Q. What is an HCP?

A. As the name implies, it contains the details on how the wind facility developer is going to take steps to minimize the take of endangered species at the site, how the site will be monitored during operation to assess and track endangered species take that does occur, and

often, as here, terms relating to mitigation of habitat loss or impact the wind facility may cause. The HCP also contains terms for how the operation of the plant may need to be adaptively managed to protect the covered species if take occurs at a level that would be expected to exceed the level of take contemplated by the ITP. Specific to High Prairie, it required the developer to purchase and restrict 217 acres of forested bat habitat in Schuyler and Adair Counties in Missouri as a means to offset the unavoidable take of the covered species by providing support for those species, including the Indiana bat. The amount of protected and conserved habitat was agreed to, based upon the population level effects, which USFWS expects to occur in relation to the take the facility would cause due to its operations. An HCP works together with an ITP essentially providing the terms and conditions under which a wind facility like High Prairie, where there is a risk of taking endangered species, will operate to minimize the conservation-related impacts of the facility. The HCP also sets out the adaptive management plans for the facility should the incremental take rate, or projected take of endangered species, exceed the expected take assumed by the HCP/ITP. The HCP works hand-in-hand with the ITP in that the ITP will generally point to the HCP and require that it be followed, if adaptive management becomes necessary.

Q. What is "adaptive management"?

A. Adaptive management consists of operational steps a facility takes to further minimize or eliminate the take of endangered species beyond a baseline operational state for the facility. For example, the ITP and HCP approved by USFWS contemplated baseline operations at night during the warmer months using a cut-in speed of 5.0 m/s. But if excessive take of endangered species were to occur using those baseline operations, the HCP called for incrementally increasing the cut-in speed (i.e., adapting to the conditions).

Q. Did Ameren Missouri have an expectation regarding the terms of the HCP when it signed the BTA?

A. As the example I just discussed indicates, it did. All the discussions with USFWS from before the BTA was signed until late 2020 indicated that the HCP (and any ITP issued) would likely require the facility to operate with a cut-in speed of 5.0 m/s at night during the warmer months and, at worst, with a cut-in speed of 6.9 m/s during those periods if adaptive management measures had to be implemented, should the take at 5.0 m/s be greater than expected. We didn't have all the details of the extent of post-construction monitoring that would be needed or the exact take expectations under an eventual ITP, but we did have strong reason to believe that any adaptive management that required cut-in speeds above 5.0 m/s at night during the warmer months would not exceed a cut-in speed of 6.9 m/s. This is why we examined what that would mean for facility operations by modeling this worst-case scenario. And we presented those results to the Commission in the CCN case.

Q. Specifically, why did you have strong reason to believe that this 6.9 m/s "worst-case" was in fact the worst case?

A. This was the information being made available to us by USFWS, by the developer's consultants, by our own conservation experts with experience in this area and based upon our discussions with other renewable energy developers with experience in these matters. Specifically, the Company had begun discussions in 2016 with renewable energy developers as part of the Company's request for proposal process, including about conservation issues which exist at all potential development sites. This is particularly true throughout large parts of Missouri north of the Missouri River. We learned as part of that process that consensus among those developers, conservation consultants who worked in this area, including with USFWS,

and the USFWS itself was that a 6.9 m/s cut-in speed would provide full avoidance for endangered bats, including Indiana bats. Therefore, at worst, we would get the production from the facility at night during the warmer months that using a 6.9 m/s cut-in speed would provide. This was first discussed by Ameren Missouri with USFWS in a December 2017 meeting where USFWS indicated its opinion that a 6.9 m/s cut-in speed would provide full avoidance. This meeting included the developer, the developer's conservation consultant, Ameren Missouri, and the Missouri Department of Conservation ("MDC"). We were also aware of published USFWS guidance from 2016 (which was cited to and discussed in the CCN docket), that indicated full avoidance would exist using a cut-in speed of 6.9 m/s.[9] Finally, in February 2019, USFWS provided comments on the developer's then-draft HCP, which provided for adaptive management at a cut-in speed of no higher than 6.9 m/s (i.e., contemplated full avoidance at that speed). While USFWS had comments on a number of aspects of the draft HCP, USFWS raised no concerns whatsoever, and suggested no changes to the 6.9 m/s cut-in speed. In fact, USFWS commented on the adaptive management outlined in the draft (to increase cut-in speeds above 5.0 m/s "up to 6.9 m/s if complete avoidance of take is needed"), stating "[a]t that level of take you would want to avoid additional risk in the summer season – curtail 6.9." The message from the experts in the field was clear: at worst, we might have to operate at night during the warmer months using a 6.9 m/s cut-in speed, in which case we would get the production we presented to the Commission and the parties in the CCN case. We had absolutely no reason to expect anything else.

[9] File No. EA-2018-0202, Terry J. VanDeWalle Surrebuttal Testimony, p. 32-33, EFIS Item No. 81 (Discussing the USFWS Northern Long-eared Bat Interim Conference and Planning Guidance, USFWS Regions 2, 3, 4, 5 and 6v (Jan. 2016), which indicates that USFWS considered use of a cut-in speed to constitute full avoidance).

Q. MDC raised a number of concerns about endangered species in the CCN case, including about the Indiana bat. Did MDC indicate during this December 2017 meeting that 6.9 m/s would not provide full avoidance?

A. No. What I understood from this discussion, coupled with other discussions like those I noted above, was that the consensus of experts in the field and conservation regulators was that 6.9 m/s would provide full avoidance. It was on that basis that we signed the BTA, but also included the provisions I alluded to earlier that would compensate us (and ultimately customers) if an ITP could not be obtained. Therefore, we had to operate at 6.9 m/s to fully avoid taking Indiana bats.

Q. Based on Dr. Marke's statements and Staff's factual recitation in their direct testimony, did that consensus prove to be incorrect?

A. Yes, unfortunately it did.

Q. Please explain.

A. Since Ameren Missouri has operated the facility, it has taken eight Indiana bats – all taken in the spring/early summer of 2021, and as a result it is now understood that operating at a cut-in speed of 6.9 m/s will not provide full avoidance. For that reason, starting in June 2021 we have conservatively changed operations at the facility at night and we do not operate any of the turbines from 45 minutes prior to sunset through 45 minutes after sunrise during the season when bats are active, i.e., essentially early April to late October. As I discussed in my testimony in File No. ER-2021-0240 and as Company witness Andrew Meyer discussed in his Direct Testimony in this case, we are actively testing and exploring technological applications that are designed to mitigate the impact of wildlife (here, Indiana and other bats) on wind facility operations, which could lead to increased operations in the future. As Mr. Meyer discusses, we

began implementing these measures this past summer but in a thoughtful and conservative way to ensure that while we tested the measures, we did not inadvertently take additional endangered bats. We do not yet have meaningful conclusions that we can draw about the efficacy of the measures, and not all of them have begun the testing phase yet, but we do expect to gain enough experience and data during the 2023 bat season – when we can test the measures for an entire bat season.

Q. What are the exact facts relating to bat mitigation steps taken at the facility?

A. As noted, we signed the BTA in April 2018 based upon our clear understanding from regulators and industry experts alike that at worst we would have to use a 6.9 m/s cut-in speed at night from April to October when temperatures were above 50 degrees. Interactions with USFWS as part of the ITP/HCP process then continued, as did that understanding. On June 5, 2020, USFWS issued a Technical Assistance Letter ("TAL") to the developer to document compliance with the Endangered Species Act. As I understand it, this is a common step in USFWS's ITP/HCP process pending finalization and issuance of an ITP for a wind facility. Attached to my testimony as Schedule AA-RI is a copy of the TAL. The developer requested the TAL because it would soon begin operating some of the facility's turbines as part of its testing and commissioning procedure as and when turbines were completed. The developer then desired what was in effect for protection from any adverse action by the USFWS should it take an endangered species, in the form of the TAL, which provided that assurance so long as operations were conducted using the operating parameters specified in the TAL.

Q. Did the TAL reflect your understanding of USFWS's guidance regarding facility operations?

A. It did. The TAL confirmed that the developer would implement certain avoidance efforts specified in the TAL and advised the developer that "[o]perating the Project in accordance with these avoidance measures will result in insignificant or discountable take of federally listed species" (i.e., what we understood to be "full avoidance"). The avoidance measures prescribed by USFWS were to use a cut-in speed of 6.9 m/s from 30 minutes before sunset to 30 minutes after sunrise when the temperature exceeds 50 degrees F.

Q. What are the key ITP/HCP terms that are now in place regarding avoidance?

A. The May 14, 2021 ITP initially required use of a cut-in speed of 5.0 m/s from 45 minutes prior to sunset to 45 minutes after sunset when the temperature is above 40 degrees F. The HCP reflects more stringent adaptive management measures such that cut-in speeds higher than 6.9 m/s have to be used depending on Indiana bat takes at the facility. [10] These terms clearly reflect what USFWS and we now understand: that is, that the 6.9 m/s cut-in speed does not provide full avoidance. That understanding was acquired due to our take of an Indiana bat on April 14, 2021, before the ITP was finalized.[11] As such, we have taken the very conservative and prudent step of not operating at night until mitigation measures can be designed and fully tested and implemented.

Q. Dr. Marke's Direct Testimony poses the question "Is High Prairie operational at all times?", and he answers "No, it has not been operating at full capacity for two years now."[12] Do you have a response?

[10] Due to the take of Indiana bats as discussed earlier, the minimum cut-in speed during the period and conditions just discussed is now 7.0 m/s under the terms of the ITP/HCP.
[11] The project developer had also taken one Indiana bat in October 2020, when it was testing and commissioning the facility. Staff witness Eubanks' testimony indicating that 9 Indiana bats were taken during Company operations is therefore incorrect – only 8 were taken during Company operations.
[12] File No. ER-2022-0337, Direct Testimony of Geoff Marke, Ph.D., p. 10, ll. 23-24.

A. Yes, I do. First, it would be exceedingly rare, in fact I am not sure it ever happens, for any generating facility to operate at "full capacity" over any extended period of time – generating facilities simply do not operate at a net capacity factor of 100% over the course of a year. And that fact has never to my knowledge been a reason to disallow recovery of prudently incurred costs of a generating facility. Second, Dr. Marke's question and answer are, whether intentionally so or not, misleading. High Prairie *is* operational at all times as the turbines are fully capable of producing power 365 days per year, 24 hours per day, assuming the wind is blowing at the minimum design cut-in speed of 3.0 m./s.[13] The fact that a plant is not operating at a particular moment in time does not mean it is not fully operational and used for service at that time. Company witness Reed addresses why Dr. Marke's position reflects his illegitimate attempt to apply an "economic used and useful" test, which should be rejected. Third, even with us taking the prudent step of curtailing operations at night during bat season, the facility, in 2022, produced a quantity of power (and RECs and production tax credits) that is within the range of expected production modeled by wind energy consultants for the facility prior to its construction, assuming (as everyone knew was possible) it had to use a cut-in speed of 6.9 m/s at night during bat season.

[13] Like all wind farms, an individual turbine may be offline for short periods during routine maintenance outages.

Q. Please further explain the third point you just made.

A. As I discussed, we knew – and we presented this to the Commission – that the facility might have to operate at night during the bat season using a cut-in speed of 6.9 m/s, and we knew what production to expect under those circumstances. We knew what production to expect because as is true with all major wind facilities to be built, a detailed wind assessment had been performed for the facility by DNV Energy USA. Wind assessments, using site-specific meteorological data, include generation profiles showing probable production levels across a spectrum of probabilities. A "P99" assessed value is intended to indicate the lowest range based on respective assumptions. In 2022, the facilities' actual production exceeded the P99 level.[14] While we naturally want to have more production, in 2022 the facility produced power at a level that was within the range the evidence in the CCN case indicated was possible if a 6.9 m/s cut-in speed had to be used at night during bat season. And, as noted, everyone knew that such a cut-in speed at night during bat season might be necessary.

Q. You noted early in this testimony that Staff's testimony consists of reciting facts about historic operations at High Prairie relating to bat mitigation operational measures that have been taken, as you discuss above, followed by an unsupported recommendation to impute phantom revenues. Would you please elaborate on why Staff's position should be rejected?

A. Yes. Staff's position can be summed up as follows: bats were taken; the Company has thus needed to not operate at night during bat season; this has lowered production; the economics of the facility have therefore not been as good as we had hoped; force the Company to bear or "eat" the shortfall. As noted, Dr. Marke's position is equally unsupported,

[14] The P99 production level was 939,000 MWhs; the facility produced 945,000 MWhs in 2022.

but at least one can discern the underpinning of why Dr. Marke takes that position, that is, the clear implication that Dr. Marke outlined concerns to build there although before OPC agreed that the CCN should be approved. That there is an underpinning to Dr. Marke's position does not make it right or sound, but at least there is one.

Staff's position has no underpinning at all. The Company's attorneys tell me it is unsupported by the law, as Company witness Reed discusses in his Rebuttal Testimony, it is unsupported by well-established regulatory policy, and what's more, it is directly contradicted by Staff's own positions being expressed simultaneously in other sworn testimony before the Commission in two other cases involving renewable facility CCNs.

Q. What other positions taken by Staff directly contradict Staff witness Eubanks' recommendation in this case?

A. Staff's sworn testimony in File No. EA-2022-0245, involving the Company's Boomtown solar facility CCN request, and File No. EA-2022, 0328, involving Evergy Missouri West's Persimmon Creek wind facility CCN request. Specifically, Staff witness J Luebbert's Rebuttal Testimony in File No. EA-2022-0245 contains an extended discussion of why the Commission should view the *Tartan* factor of "need" in the manner advocated for by Staff. One of the pillars of Company witness Luebbert's argument is that when "need" meets Staff's claimed definition of the term, there is no risk that customers will pay rates that are higher than they should be because if the utility needs the facility to provide service, customers do – and indeed should – pay rates based on revenue requirements reflecting the full revenue requirement associated with that needed facility. In this regard, witness Luebbert states:[15]

When supply-side investments, such as the Boomtown Solar project, of

[15]File No. EA-2022-0245, Rebuttal Testimony of J Luebbert, pp. 8 ll. 9-21, p. 9 ll. 11-17. Using oftentimes exact or nearly exact language, witness Luebbert makes these same statements in Rebuttal Testimony in File No. EA-2022-0328.

an IOU are included in the company's base rates, the risk of cost recovery shifts from the shareholders of the IOU to the captive ratepayers. At this point, shareholders can anticipate recovery of and return on[19] the initial investment. **If the assumptions relied upon to make the decision to build or purchase the resource prove to be incorrect or inaccurate**, ratepayers will continue to pay for the resource throughout the life of the asset through Commission approved rates **while shareholders are shielded from the negative consequences of management's decision.**

Q. How does the demonstration of need relate to the economic risks of the IOUs and its ratepayers?

A. When any utility is building or purchasing an electric generating asset, **there are risks inherent in the decision**. When the asset addition is necessary to serve the load of ratepayers, there is a risk that costs exceed the revenues from the asset**. Once the utility clearly establishes that the resource addition is necessary to meet the needs of ratepayers**, a decision must be made by the IOU to ensure that the utility can continue to serve the customer's load. Then the economic efficiency of the decision and promotion of the public interest of the decision to build or purchase a specific asset is necessary to ensure that the choice of asset is sound. **Once the need is established and the project is determined to promote the public interest based upon the best information available at the time, it is reasonable for the ratepayers to assume the risk that the project selected is uneconomic. This assumption of risk is justified because absent the load of the ratepayers, the utility would not be obligated to invest in additional resources.[16]**

(Emphasis added in bold; footnotes in quotes omitted)

Q. Why did Ameren Missouri need to invest in High Prairie?

A. Because it was statutorily mandated, based upon the load of its customers [ratepayers], to produce sufficient RECs to meet the Missouri RES.

[16] *Id*., p. 9 ll. 18-21 thru p. 10 ll. 1-10.

Q. Was the need to construct High Prairie to meet its RES requirements established in the CCN case?

A. Absolutely, else the Commission would not have granted the CCN. Indeed, Staff testified in the CCN docket that "Ameren Missouri has shown a need for the project, and should be granted a CCN…."[17]

Q. Was there a risk that High Prairie might be uneconomic or less economic than predicted when the Commission granted the CCN?

A. Yes, as discussed above, everyone knew that endangered bats were present at the facility and that curtailment at night during bat season might be necessary. What we didn't know is that curtailment above 6.9 m/s would become necessary but as with any generation project, there is always a risk that things one doesn't and can't know may negatively impact the project's economics once it is in actual operation.

Q. If Staff's recommendation (or Dr. Marke's) was adopted, would shareholders be shielded from the negative consequences caused by the need to curtail operations at night during bat season?

A. Obviously not. The Company would in effect under-recover its revenue requirement by $29 million annually[18] through no fault of its own.[19] Put another way, the risk that witness Luebbert swore would be borne by "captive ratepayers" would illegitimately be shifted to Company shareholders.

[17] File No. EA-2018-0202, Surrebuttal Testimony of Cedric Cunigan, p. 3, ll. 15-16.
[18] File No. ER-2022-0337, Claire Eubanks' Direct Testimony Workpaper 1-18-2023.
[19] And if Dr. Marke's proposal were adopted, the Company would suffer a rate base disallowance of approximately $75 million, again in the absence of any imprudence whatsoever.

Q. But under Staff's proposal, isn't the Company in fact receiving a return on and of its full investment in High Prairie, making witness Luebbert's statements consistent with staff witness Eubank's recommendation in this case?

A. I suppose if Staff wants to try to make that argument with a straight face it will do so. I am confident that the Commission would see it for what it clearly would be: an illegitimate attempt to act as though the Company is being granted its full revenue requirement for High Prairie, that is, since Staff "gives" the Company return on and of its investment with one hand, while taking $29 million away annually with the other. It would sort-of be like paying no attention to the man behind the curtain while the Great and Powerful Oz speaks; yet the man was behind the curtain, nonetheless.[20]

Q. Have you determined how Staff determined the $29 million adjustment it seeks?

A. Yes. Staff witness Eubank's Direct Testimony describes this calculation on pages 5-6. The first step of this process was "Staff estimated the amount of generation that did not occur overnight over a 12-month period ending June 2022. Staff compared two output profiles for High Prairie [the same profiles Ameren Missouri utilized in its production cost modeling in this case]. One profile reflects the operations of High Prairie most of the warm season in 2021 and for that same season in 2022 (i.e., little generation overnight from April - October). The other profile reflects High Prairie's original operating profile. To calculate the lost generation, Staff netted the generation from these two profiles in every hour, resulting in **_____**[21] MWhs not produced." They then used this

[20] Frank Morgan, playing the Wizard of Oz in the 1939 Metro-Goldwyn-Mayer classic film, *Wizard of Oz* ("Do not arouse the wrath of the Great and Powerful Oz. I said come back tomorrow. * * * Pay no attention to that man behind the curtain…")

[21] Staff designated this figure as confidential but it is not confidential.

"generation not produced" number to calculate impacts to off-system sales revenue, PTCs and REC's.

Q. Do you agree with Staff's use of this profile?

A. I do not. Staff's profile is not a reasonable representation of the normalized output of High Prairie. First, as discussed above, the Company is taking prudent measures to implement measures to mitigate the effect on energy production arising from the presence of endangered bats at the site. The use of Staff's profile would ignore these efforts. Second -- and this is further demonstration that Staff's proposal of an adjustment at all is unreasonable and haphazard - the profile Staff is using is based on use of a minimum cut-in speed of 5.0 m/s even though, as discussed above, everyone understood when the CCN was granted that operations at night from April to October might very well have to be conducted using a 6.9 m/s minimum cut-in speed. It's bad enough that Staff is proposing an adjustment at all when there is no evidence of imprudence and even worse that Staff then basis its calculation on a production level that is higher than production would be at a minimum cut-in speed of 6.9 m/s that everyone knew might need to be used for this project.[22]

[22] Dr. Marke also takes a haphazard approach to his different adjustment, crudely assuming that because the Company has prudently chosen not to operate at night for about 29% of the 8,760 hours in the year – that is, until it can fully test and implement mitigation measures – the facility is producing 29% less megawatt-hours. This crude approach fails to account for the fact that the wind resource at High Prairie is significantly more robust in the late fall, the winter, and in the early spring than it is in the warmer months of the year. This unreasonably increases the magnitude of Dr. Marke's already improper adjustment.

Q. What profile do you recommend should be used to model High Prairie output in this proceeding?

A. The profile consistent with that used in true-up in File No. ER-2021-0240, and also used in the Company's direct and true-up modeling in this case, which is still the appropriate profile to use at this time. This profile has been referred to as a 50/50, as it is the average between the two profiles referred to in Staff witness Eubank's testimony – the original and the full, voluntary overnight (April-October) profile. The use of the 50/50 profile acknowledges that efforts have been undertaken and are continuing to be undertaken to reduce the number of hours of curtailment. As earlier discussed, we expect to have a much better understanding of the efficacy of those measures by the time of the Company's next review, at which time a normalized production level based on data that can be reasonably expected to match production when rates are set in that case can be utilized.

Q. Are there other concerns with the profile Staff is using?

A. Yes. Staff's use of that profile further demonstrates the unprincipled and unfair nature of Staff's proposal to impute approximately $29 million of revenues into the Company's revenue requirements (annually) because Staff's imputation fails to recognize that every MWH of production at the facility in excess of the production assumed by Staff to calculate its $29 million adjustment will also flow back to customers via the Company's RESRAM. The effect of this is that Staff imputes revenues into the base rate revenue requirement that will benefit customers no matter what - effectively resulting in the Company (inappropriately) providing an economic guarantee of a certain level of production, and therefore market revenues and PTCs. But the mechanism through which

Staff recommends doing this means that customers would keep the benefits of those imputed revenues even if some or all of the production is restored. But if there is production restored, customers would receive the benefit of all of the actual revenues and PTCs – benefits that the Company would have already guaranteed in base rates – again through the operation of the RESRAM. Because of that, not only would customers unfairly get a $29 million base rate reduction based on an arbitrary adjustment occasioned through no fault on the part of the Company whatsoever but would get a potential windfall to the extent the Company is successful in regaining production at the facility.

III. OTHER OPC CONTENTIONS

Q. Dr. Marke comments about future operations and raises the specter of "further mitigation efforts [being] . . . enforced."[23] Please address future operations and wildlife issues at the facility.

A. It is certainly unfortunate that eight Indiana bats were taken during their use of habitat in the area during the 2021 warm season (i.e., at night when temperatures are above 40 degrees F) and also that this has reduced production the last two years. However, there is no reason to believe that the "parade of horribles" Dr. Marke hints at will occur.

First, there is no evidence whatsoever that when temperatures drop to 40 degrees F or below and the bats are inactive that there will be the need to curtail operations to guard against taking Indiana bats at all. In addition, four of the five highest producing months at the facility (November, December, January, and March) are during periods when there will be no operational mitigation for wildlife at all. Third, there is no indication whatsoever that the facility is impacted by these issues during the day on each of the 365 days in the year. All 175 turbines

[23] File No. ER-2021-0240, Geoff Marke PhD, Direct Testimony on behalf of OPC, p. 7.

are in service,[24] operating, and producing electricity each and every day of the year (subject to normal outages); at worst, all 175 turbines might not produce power or may produce less power than we had expected in 2018, at night, for part of the year. Customers will still receive PTCs, RECs will still be retired to comply with the RES, and energy and capacity revenues will still be received. Dr. Marke presented this same parade of horribles in his testimony in File No. ER-2021-0240 and it has simply not come true. Indeed, we have not taken a single endangered bat since June, 2021.

Second, as noted, the Company is diligently evaluating solutions to "recover" some or all of the hours that we were unable to operate the facility at night during bat season the past two years. We have installed a bat deterrent system and began testing it this past bat season. We have also installed a separate activity-based smart curtailment system (the DARC system discussed by Company witness Meyer in his Direct Testimony) and also began testing it this past bat season. Early testing results are promising but we have not done enough testing to draw any definitive conclusions. We intend to begin implementing and testing a third measure, a weather-based curtailment system (the modeling curtailment also discussed in Meyer's Direct Testimony), in 2023. The bottom line is that we have been taking, and will continue to take, all prudent measures at our disposal to improve the facility's capacity factor by allowing us to operate during more hours from April to October than we were able to operate during those months at night the past two years, while still protecting the bats.

Third, let me be clear: we are not going to operate in a manner inconsistent with the requirements of the ITP, as evidenced by our conservative decision to cease operating at night

[24] The Company has submitted detailed documentation establishing that the agreed-upon in-service criteria have been met for the entire facility and has consulted with the Staff, which has indicated to the Company that it agrees that the facility is fully operational and used for service.

starting on June 21, 2021 and continuing during bat season in 2022, even though it is likely that there is a cut-in speed at which we can operate without taking any Indiana bats.

Q. Dr. Marke presents various maps and charts, generally suggests that the site is a bad one for a wind facility, and more or less says that he told you so. How do you respond?

A. It is well documented that Dr. Marke initially objected to the issuance of a CCN for the facility. His fallback position was twofold: require that an ITP be obtained and/or use a cut-in speed *of 6.9 m/s at night during the warmer months.* As discussed earlier, we in fact have done both in that we have an ITP and we have operated at 6.9 m/s (or not at all) at night for most of the 2021 and all of the 2022 bat seasons. As for his objection to the facility in its entirety, OPC unequivocally agreed that it was in fact prudent for Ameren Missouri to acquire the facility under the BTA: "The Signatories agree that they shall not challenge the prudence of the decision to acquire the facility under the terms of the BTA."[25] While the signatories could challenge "the design, construction costs, interconnection costs, and all other project related costs," Dr. Marke's now-renewed opposition to Ameren Missouri owning and operating this facility – which was to be under the BTA that specified the site – has nothing to do with design, construction, interconnection, etc. In fact, the CCN case also established well-defined in-service criteria to place High Prairie in service, and no party, including Dr. Marke, has challenged that the High Prairie facility is in fact in service. I believe it is noteworthy that in his testimony in this case, Dr. Marke couches his position as his own, pointing to his personal recommendation ("What do you recommend the Commission do?"; "I recommend …"),[26] while in the CCN case his testimony was always very careful to discuss the question of whether Ameren Missouri should

[25] File No. EA-2018-0202, CCN Stipulation and Agreement, ¶12, filed August 17, 2018.
[26] File No. ER-2022-0337, Geoff Marke PhD, Direct Testimony on behalf of OPC, p. 17.

acquire High Prairie in terms of what "OPC" would or would not support. Indeed, in the CCN case, his testimony presented "OPC's specific recommendations."[27] Perhaps Dr. Marke believes that he is somehow not bound by the agreement his office – the party to both this case and the CCN case – made when it agreed to the CCN Stipulation, but of course that can't be true given that his only role here is to testify as an expert witness on behalf of OPC.

Q. Dr. Marke seems to suggest that there is some kind of siting guidance that demonstrates the facility should not have been built where it is. How do you respond?

A. Dr. Marke points to documentation from a non-governmental organization ("NGO")[28] first published in 2019[29] (well after we had committed to the project under the BTA) that describe the organization's recitation of what it contends are "best practices" for siting wind-generating facilities.

The guidance, which was not even issued when the decision to construct the facility under the BTA was made, is not a "you may put a wind facility here but not here" document, as it states in describing the purpose of the maps that Dr. Marke points to:

> [the purpose of the map is] to serve as an important source of information to support screening early in the project siting process. It can be used to inform application of the WEGs [USFWS 2012 Land-based Wind Energy Guidance], specifically Tier 1 and Tier 2 evaluations. The map is not a "go/no-go map." Areas in white - those that have relatively low conservation value - are not "go areas" just as areas that are shaded are not "no-go areas." The map can be used as one source of information to inform Tier 1 and Tier 2 analyses, but it should not be the only source of information used. It was not intended to serve as a substitute for the WEGs, but rather used in conjunction with other appropriate information on habitat and species. The map does not replace the need to consider the data and information outlined in the WEGs, consult with state and federal wildlife agencies, or conduct detailed site-level analyses of impacts. In addition, there are other social and cultural factors that may make utility-scale

[27] File No. EA-2018-0202, Geoff Marke PhD, Direct Testimony on behalf of OPC, pp. 24-25.
[28] The Nature Conservancy. Dr. Marke stated the publication was from 2021 but it was issued in 2019.
[29] Dr. Marke cited to the 2019 version in his File No. ER-2021-0240 Direct Testimony and cites to the 2021 version in his Direct Testimony in this case. Regardless, the substance of both reports is the same and as noted, the reports were not even issued until after we were already committed to the project.

> renewable development inappropriate in some sites. If, however, proposed wind projects are located in an areas of high conservation value on the Site Wind Right map, we suggest a much more cautious and transparent approach to the WEGs. Specifically, we recommend that projects proposed in these areas make the following information available to state and federal wildlife agencies and, to the maximum extent possible, to the public: 1) results of the Tier 1 and Tier 2 evaluations, specifically whether projects are anticipated to have a low, moderate, or high probability of significant adverse impacts to wildlife and habitat; 2) how determinations were made about the significance of impacts; and 3) proposed measures for mitigating impacts to projects that will have a moderate or high probability of adverse impact to wildlife and habitat (USFWS 2012a).[30]

The references in the above-quote from the Nature Conservancy document to "Tier 1 and Tier 2 analyses" point to the USFWS's 2012 Land-based Wind Energy Guidance. As testimony in the CCN Docket indicated, development of the project was done using that USFWS guidance. As I noted, while the Nature Conservancy's guidance was not even available when the decisions about this project were made, we did just what the guidance said we should do when developing a project in a more sensitive area from a conservation perspective. We took a transparent and more conservative approach to conservation issues. Among other things, we (a) required the developer to obtain an ITP using a related HCP, or else face a significant financial penalty; (b) worked openly with the UWFWS; (c) transparently told the Commission (and the parties) to the CCN case that we would have to mitigate for Indiana bats by operating at certain times at a cut-in speed higher than the design capability of the turbines; and (d) presented direct evidence that it was possible that we would have to operate in what was then understood to be the worst case – using a cut-in speed of 6.9 m/s at night in the warmer months, which would reduce production.

[30] From the Nature Conservancy document cited by Dr. Marke in footnote 12 of his direct testimony, page 8, in the section entitled "How to Use the Site Wind Right Map."

Q. Is there anything else about OPC's position in the CCN case that you find noteworthy regarding Dr. Marke's position now?

A. Yes, there is. In effect, Dr. Marke's position is that customers should be "held harmless" from any impact of knowledge that neither the Company, nor USFWS, nor others had when the Company signed the BTA and legally committed to acquire the facility. Greater curtailment than we thought was the worst-case scenario (operating at 6.9 m/s at night in warmer months) and has reduced the economic benefits of the facility the past two years and it may reduce the benefits to some extent in the future, albeit as I discussed above, we are taking all prudent steps available to mitigate any loss of economic benefits. This use of hindsight flies in the face of well-settled principles that the Commission has adhered to as long as I have been in the utility industry – and I believe much longer. Those principles hold that utility decisions are evaluated based on the state of affairs at the time they were made, and hindsight is simply *not used* to punish utilities later for decisions that do not always turn out as favorable as it was believed they would be at the time. Company witness Reed addresses the longstanding and sound policy considerations that underlie why hindsight should not be used, and why hold harmless approaches are antithetical to the regulatory compact.

Q. Dr. Marke notes his "concern" that the Company may not meet its RES obligations based on the lower production from High Prairie. How do you respond?

A. It was always the case, once we had to cancel pursuit of the Brickyard Hills wind facility (for which the Commission granted us a CCN)[31] due to the extremely high interconnection costs that would have been required, that the combination of the Atchison and High Prairie wind facilities and our other renewable energy facilities might not themselves allow

[31] File No. EA-2019-0021.

us to comply with the RES. Our plan all along had been to acquire High Prairie, Brickyard Hills, and Atchison (formerly called Outlaw) in order to meet our RES compliance obligations, as both Matt Michels and I explained in testimony in each of those dockets, including in the CCN docket for High Prairie. We thus expected to need additional resources for RES compliance even if High Prairie were able to operate at 5.0 m/s at night during the warmer months in the expected operation case presented in the CCN docket for High Prairie. We are closing the RES compliance REC shortfall we always expected to have with the Huck Finn solar facility the Commission just approved in File No. EA-2022-0244. Has our RES compliance REC shortfall been somewhat greater due to the somewhat lower production from High Prairie than we had hoped? Yes, so far but that fact is not a relevant question for this case. The only relevant question is whether we acted prudently when we signed the BTA? We did. No one claims otherwise.

Q. Dr. Marke also raises concerns about facility operations and the taking of eagles. Is this a concern?

A. No. Detailed conservation assessments regarding the risk to eagles were completed prior to the facility's construction. This too was fully of record in the CCN case. We have taken two (not endangered) bald eagles during our more than two years of operating the facility, but we have no reason to believe that there is a material risk of taking protected eagles or that eagle-related issues threaten the facility's operation.

Q. Despite it being 100% clear that hindsight is not appropriate to use in determining the prudence of the decision to acquire the facility, just for a complete evaluation of the issue, given hindsight and what has happened so far, would the Company still acquire the project if it could call for a "do over"?

A. Yes. The Company continues to evaluate request for proposals ("RFPs") and perform diligence in its efforts to acquire additional renewable facilities in furtherance of its resource plan that includes a transition to greater reliance on renewable resources. In my recent experience evaluating projects, it is becoming increasingly clear that high quality sites and projects for new wind generation are becoming increasingly competitive, and challenging to identify, build, or acquire. In fact, in the RFP responses we only got one wind project offered in Missouri. However, wind generation resources are important to the system because they provide diversity of supply benefits and are important to meet necessary customer reliability in various seasons. They also now cost about **_____** more than High Prairie did. The High Prairie facility, even at the lower capacity factors experienced for the last two years, is still a valuable part of the Company's generation portfolio that the Company is better for having acquired.

Q. Are there any other overarching regulatory concerns that arise from Staff and OPC's positions on the High Prairie facility in this case?

A. Yes. The Commission has articulated its support for renewable resources in numerous orders in the past several years. Further, it is entirely clear that the trend in the industry for a variety of compelling reasons suggests that a greater reliance on renewables will be needed in the future. Simply put, renewables must represent a meaningful part of the generating fleet of any utility going forward. But if the perspective of Staff and OPC on this issue is allowed to

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prevail and utilities are unable to recover the cost of their renewable investments based on the type of novel and completely inappropriate economic used and useful arguments advanced by Staff and OPC, renewables will become a second-class generating asset that is much riskier for utilities to invest in. Such a standard will, rather than recognizing the Commission's stated preference for renewables in numerous notable orders in recent years, instead result in a greater reluctance for utilities to make needed progress on building the next generation of clean energy and capacity resources needed to meet customers' long-term needs. As noted, second class citizen status for renewable generation would also run directly counter to the Commission's clear expression of support for adding renewable energy resources. Indeed, the Commission has stated:

> It is the public policy of this state to diversify the energy supply through the support of renewable and alternative energy sources. The Commission has also previously expressed its general support for renewable energy generation because it provides benefits to the public. [32]
>
> In addition, the Project[33] will provide positive environmental impacts, since displacement of fossil fuels for wind power will reduce emissions of carbon dioxide, sulfur dioxide, and nitrogen oxide, and reduce water usage in Missouri. [34]

[32] File No. EA-2019-0010, Report & Order, Eff. June 29, 2019, at p. 32, para. G.
[33] The Grain Belt transmission line, designed to deliver wind energy to Missouri.
[34] File No. EA-2016-0358, Report & Order on Remand, Eff. April 19, 2019, at p. 45.

IV. CAPE GIRADEAU SOLAR FACILITY

Q. Staff witness Amanda Coffer's Direct Testimony indicates that at the time of its filing Staff was "unable to determine if all of the seven in-service criteria have been met" for the Cape Girardeau solar facility. Witness Coffer indicated that Staff needed to obtain responses to two data requests it had sent on this topic before it could complete its evaluation. Have those data request responses been provided to the Staff?

A. Yes, the response to Data Request 259.2 had been provided on January 5, 2023, and the response to Data Request 259.3 was provided on February 3, 2023.

Q. Do those responses, together with the additional information the Company had already submitted regarding the Cape Girardeau solar facility demonstrate that all agreed-upon in-service criteria have been met?

A. Yes. The Company's responses to Data Request Nos. 259 and 259.1, which Staff appears to have reviewed before Staff field Direct Testimony on January 10, 2023, together with the additional responses to Data Request Nos. 259.2 and 259.3 demonstrate that all of the in-service criteria were met on or before December 31, 2022, the true-up cutoff date in this case. Attached to my testimony as Schedules AA-R2 to R5 are the Company's responses (less voluminous attachments that were included with the responses) to the above-referenced data requests.

Q. Please summarize your key points.

A. We estimated when we sought permission to acquire the High Prairie facility that we needed 700 to 800 MW of Missouri wind facilities for RES compliance. We conducted due diligence on all aspects of the facility, including in great detail with respect to conservation issues. We understood, as did the experts and regulators, and as did

the parties to the CCN case, that operational mitigation measures (operation at 5.0 m/s at night during the warmer months) would be required to protect bats. We understood, as did the experts and regulators, and as did the parties to the CCN case, that we might have to operate at the worst-case 6.9 m/s at night during the warmer months. We presented detailed evidence of all of those facts in the CCN case. The parties – Staff and OPC included – agreed that it was prudent for us to buy this facility in this location, and we did so, based on what we knew or reasonably could have known at the time. Using hindsight, we now know operation at night during the warmer months using a 6.9 m/s cut-in speed does not provide full avoidance of Indiana bats. We are diligently investigating measures to mitigate the impact of that new reality. There is no basis whatsoever for the adverse ratemaking proposals offered by Staff and OPC in this case, which fail to demonstrate imprudence in any way and which are improperly based on hindsight. For that reason and others discussed in detail in Company witness Reed's rebuttal testimony, their proposals violate basic and well-settled regulatory and ratemaking principles. Consequently, their positions should be summarily rejected.

Does this conclude your rebuttal testimony?

A. Yes, it does.

United States Department of the Interior

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June 5, 2020

Mr. Mark Casper
TG High Prairie, LLC
437 Madison Ave, Suite 22A
New York, NY 10022

Dear Mr. Casper:

The U.S. Fish and Wildlife Service (USFWS or Service) has been coordinating with TG High Prairie, LLC (Applicant) on their application for an incidental take permit, for operations of the High Prairie Wind Facility (Project), a 400 MW wind energy facility in Adair and Schuyler Counties, Missouri. In March 2020 discussions with the Service, the Applicant requested a technical assistance letter (TAL) documenting their compliance with the Endangered Species Act (ESA) of 1973 (as amended).

Section 9(a)(1)(B) of the ESA, 16 U.S.C.§ 1538 (a)(1)(B), makes it unlawful for any person to "take" an endangered species. Take of threatened species is prohibited pursuant to 50 C.F.R. § 17.31, which was issued by the USFWS under the authority of Sections 4(d) and 9(a)(1)(G) of the ESA, 16 U.S.C. §§ 1533(d) and 1538(a)(1)(G), respectively. "Take" is defined by the ESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" 16 U.S.C. § 1532(19).

The Applicant's 2016 and 2018 pre-construction surveys[1] of the project area indicated presence of all Covered Species (i.e., Indiana bat, northern long-eared bat, and little brown bat) during the summer maternity season. In addition, results of mist-net surveys between June and August of 2016 and 2018 were used to estimate 8 Indiana bat maternity colonies, 12 northern long-eared bat maternity colonies, and 4 little brown bat maternity colonies within the Project Area.

To avoid potential effects to federally listed species (i.e. Indiana bat and northern long-eared bat) caused by the turbine operation, and pending Habitat Conservation Plan (HCP) completion and potential Incidental Take Permit (ITP) issuance, the Applicant agrees to implement all avoidance measures and monitoring efforts listed below. Operating the Project in accordance with these avoidance measures will result in insignificant or discountable take of federally listed species.

[1] Surveys were conducted according to the Service's 2016 "Range-wide Indiana Bat Survey Guidelines"

This TAL will be valid for up to a full year or until an ITP for the Covered Species is obtained and the Project begins operating under the ITP coverage.

Avoidance Measures

The Applicant commits to feathering all turbines during the spring migration period, summer maternity period, and fall migration period (March 15th- October 31st) for the first year of Project operations or until an ITP is obtained for the Covered Species (whichever is sooner), below a cut-in speed of 6.9 meters per second (m/s) for 0.5 hour before sunset to 0.5 hour after sunrise when the air temperature is above 50°F.

Turbines will be monitored and controlled based on wind speed on an individual basis (i.e., the entire facility will not alter cut-in speed at the same time, rather operational changes will be based on wind speed conditions specific to each turbine). Turbines will begin operating when the 10-minute rolling average wind speed is above 6.9 m/s; turbines will be feathered again if the 10-minute rolling average wind speed goes below 6.9 m/s during the course of the night.

Monitoring and Reporting Commitments

The Applicant commits to monitoring all turbines during the first year of Project operations, or until an ITP is obtained, whichever comes first. Monitoring will not occur at turbines which had not operated since the last visit, or which had only operated between 0.5 hour after sunrise and 0.5 hour before sunset. To document overall bat fatality rates, areas around operating turbines will be searched with a weekly search interval (I=7), and 10% of turbines will be assigned to full plots, and 90% of turbines will be searched on the roads and pads. Monitoring is designed to achieve a detection probability (g) of 0.1 (based on the assumptions outlined in the draft HCP).

Search Methods:
In all seasons, road and pad search plots will include the entire gravel turbine pad and all gravel access roads within 95 m (312 ft) of the turbine. At 60 m (197 ft) radius cleared-plot turbines, 23 transects will be spaced at approximately 16.4-foot intervals. Observers will walk at a rate of approximately 2 mph, scanning the ground for carcasses within 8.2 feet of each transect. The observer will start at one side of the circular plot and systematically search in a north/south or east/west direction, switching the search pattern on a weekly basis. At road/pad turbines, the observer will walk the access road starting at 312 feet from the turbine and walk towards the turbine, around the turbine, and back towards the starting point, searching out 8.2 feet on each side until the entire road/access pad is searched.

Searchers may be assisted by trained canines. Searchers will be familiar with and able to accurately identify bat species likely to be found in the Project area. Any unknown bats or suspected individuals of the covered species discovered during fatality searches will be sent to a qualified USFWS-approved bat expert for positive identification or may be sent for genetic testing to determine species and/or sex.

Any carcass of a listed species (or suspected listed species, prior to confirming ID) will be reported to the Service within 24 hours of finding.

Data Collection:
Data to be recorded for each search include date, start time, end time, observer, turbine area searched (including Universal Transverse Mercator [UTM] coordinates) and weather information. When a dead bat or bird is found, the observer will either record data, or place a flag near the carcass and continue the search. The observer will record data including the date, species, sex and age (when possible), observer name, turbine number, measured distance and bearing to turbine, habitat surrounding carcass, condition of carcass (intact, scavenged), and estimated time of death (e.g., less than one day, two days, etc.). The condition of each carcass found will be recorded using the following categories:

- Intact - a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger.
- Scavenged - an entire carcass that shows signs of being fed upon by a predator or scavenger, a portion(s) of a carcass in one location (e.g., wings, skeletal remains, portion of a carcass, etc.), or a carcass that has been heavily infested by insects
- Feather Spot - 10 or more feathers at one location indicating predation or scavenging of a bird carcass.

A digital picture of each detected carcass (all species, not just the covered species) will be taken before the carcass is handled and removed. All bat carcasses will be labeled with a unique number, bagged, and stored frozen as needed for future studies (with a copy of the original data sheet) at the Project operations and maintenance building. The Applicant will also collect a tissue sample from each bat carcass for submission to the USFWS and/or the Missouri Department of Conservation (MDC).

Bird carcasses will be identified and recorded as described above, but will not be collected and instead will be left in place. Bird carcasses will be noted to ensure carcasses are not recorded multiple times during surveys. All injured bats and birds observed in search plots also will be recorded (labeled as intact) and considered as fatalities for future analyses. The health of injured birds will be assessed in the field, and in consultation with a wildlife rehabilitator. If the bird is considered a candidate for rehabilitation by the wildlife rehabilitator, and able to be safely captured, the bird will be carefully captured by the observer and immediately transported to the nearest wildlife rehabilitation center, depending on the rehabilitation center availability. No injured bats will be transported from the facility due to the concern of spreading white-nose syndrome. Injured, non-myotis bat species will be humanely euthanized. Any bat that is euthanized will be placed in a plastic bag, labeled, and maintained similarly to the carcasses described above.

Carcasses found in non-search areas (e.g., near a turbine not included in the search area) or outside of the scheduled search time will be coded as incidental discoveries and will be documented in a similar fashion as those found during standard searches. Incidental discoveries found outside the scheduled search area will not be included in the calculation of fatality estimates. Those found outside scheduled search times, but within a scheduled search area, will

be included in estimates under the assumption that they would have been found during the next search had they not been found incidentally. Data on incidental discoveries will be included in all reports.

Annual Reporting:
Annual reports describing the avoidance measures implemented and the methods and results from mortality monitoring will be submitted to the Missouri Field Office within one year after the TAL goes into effect. Annual reports will include:

- Results from monitoring, including results of bias corrections (i.e., searcher efficiency trials, scavenger removal trials, and searchable area adjustments) and estimates of bat mortality;
- Raw data sheets (that include all bat and bird fatalities); and
- Spreadsheets showing the temperature, timing, and actual speeds at which the turbines were operational and feathered during the monitoring period.

In addition, the Applicant commits to the following while operating under the TAL for High Prairie Wind Facility:

1. The Applicant will implement the voluntary Bird and Bat Conservation Strategy plan pursuant to the USFWS's Wind Energy Guidelines that describes: (a) risks to wildlife associated with the Project, (ii) avoidance and minimization techniques incorporated into the design and operation Project, and (iii) post-construction mortality monitoring and reporting. That plan, including post-construction monitoring, will be in place at the start of operations. The Applicant should retain all bat carcasses and send tissue samples (protocol forthcoming) to the Missouri Ecological Services Field Office.

2. To reduce effects to all bat species in the area, the Applicant will limit tree clearing to between Nov 1- Mar 31, with the possible exception of supplemental tree-clearing necessary to accommodate any final layout design changes.

3. The measures outlined in this TAL will be superseded by the avoidance, minimization, and mitigation measures established in the HCP and the ITP, pending Service evaluation and determination of permit issuance.

This office is not authorized to provide guidance in regards to the USFWS Office of Law Enforcement (OLE) investigative priorities involving federally listed species. However, we understand that OLE carries out its mission to protect ESA-listed species through investigation and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of listed species; and by encouraging others to implement measures to avoid take of listed species. It is not possible to absolve individuals or companies from liability for unpermitted take of listed species, even if such take occurs despite the implementation of appropriate take avoidance measures. However, the OLE focuses its enforcement resources on individuals and companies that take listed species without identifying and implementing all reasonable, prudent and effective measures to avoid such take.

This office concludes that, if the Applicant follows the measures above, the High Prairie Wind Facility is unlikely to result in prohibited take of ESA listed species.

Thank you for your continuing coordination on project development. Should you have questions regarding this TAL, please contact Laurel Hill, 573/234-5038; Laurel_Hill@fws.gov, of my office.

Sincerely,

KAREN HERRINGTON

Digitally signed by KAREN HERRINGTON
Date: 2020.06.05 15:25:49 -05'00'

Karen Herrington
Field Supervisor

cc: MDC, Jefferson City, MO (J. Campbell)

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0259

Staff has utilized the following in-service criteria to evaluate solar facilities prior to inclusion in a utility's rate base: 1. All major construction work is complete. 2. All preoperational tests have been successfully completed. 3. Facility successfully meets contract operational guarantees that are necessary for satisfactory completion of all other items in this list. 4. Upon observation of the facility for 72 consecutive hours the facility will have demonstrated that when sunlight was shining on it during that period it produced power in a standard operating mode. 5. Facility shall meet at least 95% of the guaranteed capacity (in MW AC) based on the Capacity Test in Exhibit 1 (not attached). The Capacity Test shall determine the facility's Corrected Capacity at the Design Point Conditions. 6. Sufficient transmission/distribution interconnection facilities shall exist for the total plant design net electrical capacity at the time the facility is declared fully operational and used for service. 7. Sufficient transmission/distribution facilities shall exist for the total plant design net electrical capacity into the utility service territory at the time the facility is declared fully operational and used for service. Provide any interconnection studies, construction punch lists, construction reports, and commissioning certificates applicable to the construction of Neighborhood Solar facilities, including but not limited to the Cape Girardeau facility. Additionally, describe any operational guarantees, capacity tests, and/s performance testing requirements contained in any executed contract related to the construction of Neighborhood Solar facilities, including but not limited to the Cape Girardeau facility.
Requested by Amanda Coffer (Amanda.coffer@psc.mo.gov <mailto:Amanda.coffer@psc.mo.gov>)

RESPONSE

Prepared By: Chad Raley
Title: Manager, Renewable & Technology Business Development
Date: 10/7/22

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(ATTACHMENTS ONLY)

- Item 1

SCHEDULE AA-R2

    - Construction on the Cape Girardeau solar facility was completed and the facility was placed in-service on July 20, 2022. However, after submitting the as-built drawings for final drafting, the Contractor informed Ameren that the AC cables from the inverters to the main switchboard were derated and new, larger cables needed to be installed. Once this was discovered, additional cables were ordered with a 4-week lead time and the 8 inverters affected by this issue were de-energized for safety reasons. However, the facility continues to produce energy. The power cables are expected to be delivered on October 3, 2022 with an estimated cable construction completion of October 27, 2022.
    - Cape REC Punch List – 08.15.2022.docx
- Item 2
    - Ameren Show Me Center – 395W.pdf
    - Ameren Show Me Center 400W.pdf
    - Array #1 Installation Inspection Report.pdf
    - Array #2 Installation Inspection Report.pdf
    - Array #3 Installation Inspection Report.pdf
    - Array #4 Installation Inspection Report.pdf
    - Array #5 Installation Inspection Report.pdf
    - Array #6 Installation Inspection Report.pdf
    - Array #7 Installation Inspection Report.pdf
    - Array #8 Installation Inspection Report.pdf
    - Cable Megger Test Results.pdf
    - DC Local Control Distribution Panel Checklist.pdf
    - Low Voltage Disconnect Switch Checklist.pdf
    - Medium Voltage Dry Type Transformer Checklist.pdf
    - North Array DC Voltages.pdf
    - South Array DC Voltages.pdf
    - PV Megger Testing.pdf
- Items 3, 4 and 5
    - AUE-SPEC-000026-Rev 1_conformed final_Section 16999 Inspection and Testing.pdf
    - CGREC_Capacity Verification Datasheet_2022-07-25_rev1.xlsx
- Items 6 and 7 – Interconnection Study
    - DG93 - Show Me Solar Generation Connection Study Report - Rev 0.pdf

Please see attachments at the link below:

https://ameren.sharepoint.com/sites/XAMMOREGFILESHARE/Case/Forms/AllItems.aspx?id=%2Fsites%2FXAMMOREGFILESHARE%2FCase%2FData%20Requests%2FMPSC%2FMPSC%200259%20C%2E%20Raley%20CONF&viewid=5e4712e1%2D91f6%2D47be%2D9223%2D56c9500b4de5

SCHEDULE AA-R2

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC -0259.1

1. The response to DR 259 indicates that new AC cables had been ordered for the inverters, with an expected completion date of 10/27/2022. Has this been completed? If so, please provide documentation. If not, please explain why. 2. Does Ameren have a Certificate of Substantial Completion from its contractor or other documentation indicating the date the facility was considered to be substantially complete? If so, please provide. If not, please explain why.
Amanda Coffer (amanda.coffer@psc.mo.gov <mailto:amanda.coffer@psc.mo.gov>

RESPONSE

Prepared By: Chad Raley
Title: Manager, Renewable & Technology Business Development
Date: 12/1/2022

1. Yes, the AC cable replacement has been completed. Please see attachment "MPSC 0259.1 Attach - Ameren SEMO AC Cable Meggering Chart 10-24-22.pdf" and " MPSC 0259.1 Attach - North & South Array AC Voltage readings October 24 2022 re-pulls.pdf" as testing results for the replaced cables.
2. Yes. Please see the attached "MPSC 0259.1 Attach - 20221130 Tarlton Substantial Completion.pdf"

SCHEDULE AA-R3

Ameren Missouri's
Response to MPSC Data Request
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0259.2

As a response to DR 259 #5, Ameren provided the following documents:

- AUE-SPEC-000026-Rev 1_conformed final_Section 16999 Inspection and Testing.pdf
- CGREC_Capacity Verification Datasheet_2022-07-25_rev1.xlsx

The capacity test calculations procedures are in section 4.1.2.1 of the inspection and testing document. This document has the following calculations and defined constants:

4.1.2.1

(1) T_{CELL} = T_{MODULE} + 1.5

(2) W_{COR} = W_{MEAS} X (IRR_{DPC} / IRR) X (1/(1 + T_{COEFF} (T_{CELL} – T_{DPC})))

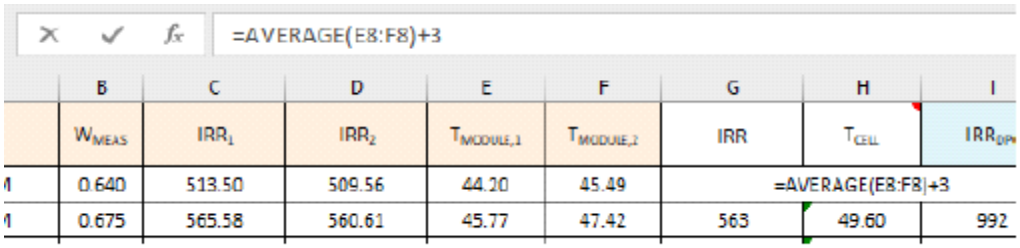
(3) W_{guar} = W_{COR} / W_{GUAR}

Where…

W_{MEAS}	= Measured AC capacity in [MWac]
IRR	= Measured irradiance in [W/m^2]
T_{MODULE}	= Measured module backsheet temperature in [°C]
T_{CELL}	= Measured module cell temperature in [°C]
W_{COR}	= Corrected AC capacity at Design Point Condition (DPC) in [MW]
T_{COEFF}	= Temperature coefficient of max power of installed module (-0.0036/°C)
T_{DPC}	= Temperature at DPC (45.0 °C) in [°C]
IRR_{DPC}	= Direct normal irradiance at DPC in (1,050 W/m^2)
W_{GUAR}	= Guaranteed AC capacity of the system (1.200 MW-AC) in [MWac].

And the capacity verification datasheet has the following calculations and defined constants that do not match the above:

IRR_{DPC}	992	[W/m2]
T_{DPC}	55	[°C]
W_{GUAR}	1.047	[MW]



The IRRDPC, TDPC and WGUAR in the capacity verification datasheet do not match those in the capacity test calculation procedures or the capacity test procedures provided in ER-2021-0240 Staff Data Request 432.Additionally, the calculation in the procedures for TCELL do not match what was used in the datasheet. Please explain the discrepancies.

RESPONSE: (Do not edit or delete this line or anything above this. Start typing your response right BELOW Date.)

Prepared By: Dan Stroh
Title: Consulting Engineer, Renewable Business Development
Date: 12/21/2022

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(ATTACHMENTS ONLY)

The constants were determined, utilizing the project's PVSyst energy model data, which are updates to the information provided in the ER-2021-0420 response to Staff Data Request 432.

- The values for T_{DPC}, IRR_{DPC}, and W_{GUAR} were determined through the PVSyst energy model data. Please see the attached "CGREC_PVSyst 8760 Report_DPC_CONF ".
    - The above constants were determined by first selecting a dataset with an irradiance nearest to 1000 W/m^2 within the month of the proposed Capacity Test (July). That value (992 W/m^2) was recorded as the Direct Normal Irradiance at Design Point Conditions (IRR_{DPC}). Then, the cell temperature (55.0 DegC) and AC capacity (1.047 MWac) associated with this dataset were recorded as the constants for the Capacity Test. These constants are Temperature at Design Point Conditions (T_{DPC}) and Guaranteed AC Capacity (W_{GUAR}) respectively.

- The T_{CELL} calculation is correct in the Specifications. Please see the corrected and attached "CGREC_Capacity Verification Datasheet_2022-12-21_rev 2_CONF".

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0259.3

The capacity tests provided were completed before the cables were replaced. Does Ameren intend to complete new capacity tests now that the cables have been replaced? If no, why not? Amanda Coffer (amanda.coffer@psc.mo.gov)

RESPONSE

Prepared By: Dan Stroh
Title: Consulting Engineer, Renewable Business Development
Date: 01/30/2023

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(ATTACHMENTS ONLY)

The capacity test provided in response to MPSC 0259 met in-service Criteria 4, demonstrating that when sunlight was shining on the facility, during a 72 hour period, it produced power in standard operating mode.

However, as a matter of transparency, Ameren Missouri completed another capacity test after the cables were replaced demonstrating the facility continued to meet the in-service criteria. Ameren Missouri does not believe punchlist items such as the replacement of cables impacts the overall in-service designation of a facility. Please see attached *CGREC_Capacity Verification Datasheet_rev3_CONF_2022-10-24*.

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 Revenues for Electric Service.	)))	Case No. ER-2022-0337

AFFIDAVIT OF AJAY K. ARORA

STATE OF MISSOURI)
) ss
CITY OF ST. LOUIS)

Ajay K. Arora, being first duly sworn states:

My name is Ajay K. Arora, and on my oath declare that I am of sound mind and lawful age; that I have prepared the foregoing *Rebuttal Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.

/s/ Ajay K. Arora
Ajay K. Arora

Sworn to me this 15th day of February, 2023.