

MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT

COST OF SERVICE

APPENDIX 4

CONSTRUCTION AUDIT AND PRUDENCE REVIEW



**THE EMPIRE DISTRICT ELECTRIC COMPANY,
d/b/a LIBERTY (EMPIRE)**

CASE NO. ER-2021-0312

*Jefferson City, Missouri
October 2021*

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STAFF REPORT – COST OF SERVICE**

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d/b/a LIBERTY (EMPIRE)**

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APPENDIX 4: WIND PROJECTS

PURPOSE OF STAFF'S CONSTRUCTION AUDIT AND PRUDENCE REVIEW

Staff has performed this construction audit to determine the appropriate level of costs for the purchase of the North Fork Ridge Wind Project (“North Fork”), Kings Point Wind Project (“Kings Point”), and Neosho Ridge Wind Project (“Neosho Ridge”),¹ collectively Wind Projects, to be used for the purpose of setting rates, and to provide an independent and objective assessment of the utility’s decision making and performance as it relates to this specific project. Liberty-Empire purchased the Wind Projects through purchase sale agreements (PSA).² In providing this recommendation, Staff has examined Liberty-Empire’s contracts with the Sellers³ to purchase the facility and subsequent changes to the PSAs occurring since the issuance of the associated certificates of convenience and necessity (“CCN”). Staff reviewed Empire’s PSAs, amendments, and change orders to determine if those decisions were unreasonable, excessive, inappropriately allocated, unnecessary, of no benefit to Missouri ratepayers, or inappropriate in any manner; and if such decision would result in harm to ratepayers, in light of the following factors established by Staff:

- Impact on Rate Base.
- Projected operations and maintenance expense.
- Projected fuel and consumable-related expense.
- Projected effect on the Fuel and Purchase Power Cost Recovery Mechanism.
- Projected effect on depreciation rates and expense.
- Projected operational impacts including plant dispatchability, dispatch order, or reductions to net generation.
- Consistency with the utility’s Preferred Resource Plan effective at the time the project was undertaken, and as subsequently updated or superseded.

¹ On October 18, 2018, Empire filed its Application for Certificate of Convenience and Necessity (CCN) in Case No. EA-2019-0010 to acquire an interest in two holding companies that owned the Wind Projects and to authorize Empire to own, operate, maintain, and otherwise control and manage the Wind Projects.

² Other recent Empire projects have been constructed pursuant to Build-Transfer Agreements, which involve a greater number of utility decisions subject to Commission prudence review.

³ As discussed in greater detail, the Sellers for North Fork and Kings Point are Liberty Utilities Co. and Steelhead Missouri Matrix Wind Holdings, LLC. The sellers for Neosho Ridge are Steelhead Wind 3, LLC, and Apex Neosho Ridge Wind Member, LLC.

- Compliance with State and Federal mandates that go into effect during construction of the project.
- Compliance with settlements or other agreements.

Staff expert/Witness: Kimberly K. Bolin

The Engineering Analysis Section is responsible for and conducts Engineering Reviews of major electric utility construction projects. The Engineering Review consists of monitoring the progress of construction and reviewing construction project changes such as change orders and schedule changes. In this case, Engineering Staff reviewed construction changes associated with the project for the following:

- To understand the reason for the change at the point in time when it occurred;
- To determine whether the change corrected an engineering-related problem, resulted in a better design, or improved the operation or construction of the plant; and
- To determine whether the change resulted in a safety concern, caused unnecessary construction, or caused unnecessary duplication of facilities or work.

In addition, the Engineering Staff reviews contracts, agreements, purchase orders, drawings, and correspondences related to the changes. If Engineering Staff determine there is an engineering concern with a change the Engineering Staff would share its concern with the Commission's Auditing Staff and consult with Staff management to determine the appropriate response to take to address the concern.

As discussed in the Staff Cost of Service Report, Engineering Analysis provides recommendations related to whether generating units are fully operational and used for service.

Staff recommends the North Fork Ridge Project be considered fully operational and used for service as of April 21, 2021. Staff has requested additional information and verification from the Company regarding the satisfaction of the in-service criteria for Kings Point and Neosho Ridge. Staff will continue to review information provided by the Company and will provide its recommendation concerning full or partial satisfaction of the in-service criteria for Kings Point and Neosho Ridge in a subsequent round of testimony. At this time, Staff recommends proceeding with the development of a revenue requirement as though all three wind farms are in-service.

Staff Experts/Witnesses: Claire M. Eubanks, P.E., Charles T. Poston, P.E., and J Luebbert

PROCEDURAL HISTORY

In Case No. EO-2018-0092, Liberty-Empire presented its Customer Savings Plan (CSP) in which Liberty-Empire would acquire, in conjunction with tax equity partners, wind generation located in or near its service territory. On April 24, 2018, Liberty-Empire, Staff, and other parties filed a Non-Unanimous Stipulation and Agreement, which modified the CSP in order to address the risk to customer savings during the first ten years of the CSP.⁴ However, the Commission did not approve the non-unanimous stipulation and agreement. On July 11, 2018 the Commission issued its Report and Order, including that:

The Empire District Electric Company is authorized to record its capital investment to acquire wind generation assets as utility plant in service subject to audit in Empire's next general rate case.

In Case No. EA-2019-0010, on June 19, 2019, the Commission authorized Liberty-Empire to acquire an interest in the holding companies that were at that time planning the North Fork Ridge, Kings Point, and Neosho Ridge wind generating facilities. In Case No. EA-2019-0010, on June 19, 2019, the Commission further granted Liberty-Empire a CCN to own, operate, maintain, and otherwise control and manage the three wind generation facilities, subject to conditions.⁵ These conditions include authorizing Liberty-Empire to record its capital investment to acquire the Wind Projects as plant in service, subject to audit and satisfaction of in-service criteria:

i. Rate Basing Wind Projects. So long as Empire's Wind Projects acquisitions comply with the conditions set out herein, and subject to any prudence review, Empire is authorized to record its capital investment to acquire the Wind Projects as utility plant in service subject to audit in Empire's next general rate case consistent with the Commission's Report and Order in File No. EO-2018-0092.

j. Prudence not waived. Nothing in this Report and Order precludes the Commission, the signatories to the Non-Unanimous Stipulation and Agreement, or the other parties from reviewing the reasonableness and prudence of the costs of each Wind Project in a general rate proceeding following the date when that/those Wind Project(s) is/are fully operational and used for service.

⁴ The signatories additionally filed an Addendum to Non-Unanimous Stipulation and Agreement on May 7, 2018.

⁵ Report and Order effective June 29, 2019 in EA-2019-0010.

1. Rate Case Recommendations. In any Empire general rate case(s) where a Wind Project is first included in Empire’s rate base for setting rates, the signatories to the Non-Unanimous Stipulation and Agreement shall recommend a true-up period that ends no later than five months prior to the operation of law date. A Wind Project will be excluded from Empire’s rate base used for setting Empire general distribution rates if the Wind Project does not satisfy the in-service criteria for that Wind Project before the end of the true-up period.

Staff expert/Witness: Claire M. Eubanks, PE

NORTH FORK RIDGE AND KINGS POINT

Overview

North Fork Ridge is located in northwestern Jasper County and southwestern Barton County, Missouri. The project has a capacity of approximately 149.4 MW (69 turbines) and interconnects via an approximately 6.5-mile 161 kV generation tie line to the substation at Liberty-Empire’s Asbury Power Plant.

The Kings Point Wind Farm is located in southwest Missouri and includes land in parts of Barton, Dade, Jasper, and Lawrence Counties. The wind farm has a generation capacity of approximately 149.4 MW and is made up of 69 wind turbines. The wind farm is interconnected with the transmission system at the substation located at Empire’s La Russell Energy Center via a 15-mile 161 kV generation tie line.

At the time of the granting of the CCN, the North Fork Ridge project and the Kings Point project were planned to be constructed under the terms of separate PSAs between Liberty-Empire and Tenaska Missouri Matrix Wind Holdings, LLC (“Tenaska”) and Steelhead Missouri Matrix Wind Holdings, LLC (Steelhead”). Tenaska and Steelhead formed a holding company, which in turn formed “North Fork Ridge, LLC” and “Kings Point, LLC”, the project companies. The project companies, ** [REDACTED] ** selected Mortenson as its contractor. ** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] ** on

October 8, 2019, Tenaska terminated its role in the project.⁶ On October 11, 2019, Liberty Utilities Co. (“LUCo”) took over Tenaska’s role in the project.⁷

Liberty-Empire, along with its tax equity partners, purchased North Fork Ridge on January 27, 2021, and Kings Point on May 5, 2021.

ENGINEERING REVIEW

A. Summary

During the course of Staff’s engineering review for North Fork Ridge and Kings Point, several issues presented themselves either due to impacts to project costs and/or project schedules. The issues below do not represent the full extent of the engineering review performed by Staff, but were felt to be important enough to warrant additional discussion within this report.

Delays related to Clean Water Act Section 404 permits and the consequences from the COVID-19 pandemic resulted in additional costs to the wind farm projects and impacted schedules. Interconnection costs were also subject to changes throughout the projects’ construction and were updated as the required studies were performed. Finally, there were two issues related to the failures of components that affected both North Fork Ridge and Kings Point. Staff is continuing to monitor Empire’s investigation of the transformer failure which occurred at the Kings Point substation.

B. Section 404 Permitting Delays

The North Fork Ridge and Kings Point projects experienced delays in receiving its Clean Water Act Section 404 permits. In order to keep the projects on schedule, ** [REDACTED]

[REDACTED] **⁸ Section 404 of the Clean Water Act requires a permit from the United States Army Corps of Engineers (USACOE) before dredged or fill material can be discharged into waters of the United States. Pre-construction notification is required when there is a potential impact to threatened or endangered species and the USACE consults with United States

⁶ Case No. EA-2019-0010 Empire’s Notice Concerning Status and Change of Contract Party filed on November 5, 2019.

⁷ Case No. EA-2019-0010 Empire’s Notice Concerning Status and Change of Contract Party filed on November 5, 2019.

⁸ Schedule TM-1 ** [REDACTED] **

Fish and Wildlife Service (USFWS) in its permit issuance. Additionally, the USACOE considers the effect the permit will have on historic properties.

** [REDACTED]

[REDACTED] ** However, later the IRS extended the PTC deadline on May 27, 2020 due to the COVID-19 pandemic.⁹ ** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **10

** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **

C. COVID-19 Impacts at North Fork Ridge and Kings Point

On February 5, 2020, Vestas notified the project company that it would issue a Force Majeure notice related to the disease outbreak from the virus that would come to be known as COVID-19. Blades for the Vestas V120 used at North Fork Ridge were sourced from China, but it was confirmed that all 57 sets of blades had already be completed.¹¹ No major turbine components for Kings Point were sourced directly from China.¹² The possibility of impacts to supply lines originating in China were discussed and meetings between Empire, the project

⁹ Notice 2020-41.

¹⁰ Response to OPC 8046 in ER-2021-0312 and Case No. EA-2019-0010, North Fork Ridge September 2020 Construction Report (Public Version), page 4.

¹¹ Case No. EA-2019-0010, North Fork Ridge February 2020 Construction Report (Public Version), page 1.

¹² Case No. EA-2019-0010, Kings Point February 2020 Construction Report (Public Version), page 1.

company, and Vestas were scheduled on a regular basis for the planning of risk mitigation actions and other contingencies.

In March 2020, Mortenson notified the project company of the potential for a Force Majeure event due to COVID-19. That Force Majeure notice was eventually issued on March 25, 2020. Mortenson did not request a change to the schedule which anticipated project completion at North Fork Ridge and Kings Point which was still anticipated before December 31, 2020.^{13,14} It was during this time that COVID-19 was recognized as a threat to the project schedule.^{15,16} Due to an increasing prevalence of viral infection in the communities near the wind farm sites, Mortenson initiated a plan to prevent the spread of the virus. The plan would continue to be revised throughout the project based on Center of Disease Control (CDC) guidance.^{17,18}

By April 2020, the date of substantial completion for Kings Point was pushed back to December 9, 2020, due to delays in the delivery of turbine towers from India and Malaysia. The delays were attributed to measures taken by the governments of those countries in response to COVID-19.¹⁹

By June 2020, overseas manufacturing related to the wind towers for Kings Point had been completed, but the full impact to the project cost and schedule was still unknown. The substantial completion date was pushed back to January 7, 2021.²⁰

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Additionally, during January 2021, due to the effects of COVID-19, Kings Point reported a temporary impact to the availability of personnel needed for tower wiring.²²

¹³ Case No. EA-2019-0010, North Fork Ridge March 2020 Construction Report (Public Version), page 1.

¹⁴ Case No. EA-2019-0010, Kings Point March 2020 Construction Report (Public Version), page 1.

¹⁵ Case No. EA-2019-0010, North Fork Ridge March 2020 Construction Report (Public Version), page 4.

¹⁶ Case No. EA-2019-0010, Kings Point March 2020 Construction Report (Public Version), page 3.

¹⁷ Case No. EA-2019-0010, North Fork Ridge March 2020 Construction Report (Public Version), page 2.

¹⁸ Case No. EA-2019-0010, Kings Point March 2020 Construction Report (Public Version), pages 1-2.

¹⁹ Case No. EA-2019-0010, Kings Point April 2020 Construction Report (Public Version), page 2.

²⁰ Case No. EA-2019-0010, Kings Point June 2020 Construction Report (Public Version), page 2.

²¹ Case No. EA-2019-0010, North Fork Ridge August 2020 Construction Report (Confidential Version), page 1.

²² Case No. EA-2019-0010, Kings Point January 2021 Construction Report (Public Version), page 4.

The disruptions caused by COVID-19 resulted in increased costs at both North Fork Ridge and Kings Point. It is estimated that delays attributable to COVID-19 resulted in additional costs of *** [REDACTED] *** for North Fork Ridge and *** [REDACTED] *** for Kings Point.²³ For North Fork Ridge, the COVID-19 related cost increases represent ** [REDACTED] ** of the original budgeted cost. For Kings Point, the COVID-19 related cost increases represent ** [REDACTED] ** of the original budgeted cost.

D. Interconnection and Network Upgrades

Empire executed Interim Generator Interconnection Agreements (IGIA) with the Southwest Power Pool (SPP) in November 2019. The North Fork Ridge and Kings Point interconnection facilities included in IGIA have been built and funded.

In its Interconnection Facilities Study Reports for GEN-2017-082 and GEN 2017-060 (Drafts dated September 17, 2021), SPP determined that to receive full Interconnection Service for the two wind farms (149.4 MW each), the assigned Transmission Owner Interconnection Facilities, Non-Shared Network Upgrades, Shared Network Upgrades, Contingent Network Upgrades, and Affected System Upgrades are required to be completed. The estimated costs allocated to the wind farms are summarized below:

<u>Description</u>	<u>Allocated Cost Estimate North Fork Ridge</u>	<u>Allocated Cost Estimate Kings Point</u>
Transmission Owner Interconnection Facilities Upgrade(s) ²⁴	\$800,000	\$800,000
Non-Shared Network Upgrade(s)	\$3,406,649	\$2,400,000
Shared Network Upgrade(s)	\$0	\$0
Affected System Upgrade(s) ²⁵	\$301,774	\$80,385
<u>Total</u>	<u>\$4,508,423</u>	<u>\$3,280,385</u>

** [REDACTED]

[REDACTED]

[REDACTED]

²³ Case No. ER-2021-0312, Empire Response to Staff Data Request 257.

²⁴ Empire District Electric is the transmission owner for both North Fork Ridge and Kings Point.

²⁵ Associated Electric Cooperative, Inc. (AECI) is the Affected System Transmission Owner.

E. Construction Issues at North Fork Ridge and Kings Point

Substation Transformer Failures

On December 26, 2020, a voltage transformer at the North Fork Ridge substation failed. That transformer failure resulted in an outage that affected the entire generating capacity of the wind farm. By December 30, 2020, repairs had been completed and the wind farm was returned to commercial operation.²⁸ At that time, Mortenson performed an initial investigation into the cause of the failure and recommended that an outside party investigate it as well. Staff is waiting on further details from Empire requested in data requests 283 to 286.²⁹ If Staff's review of the information warrants an update to Staff's recommendation, Staff will do so in its rebuttal testimony.

On February 16, 2021, the same type of voltage transformer in the Kings Point substation failed and again resulted in the entire generating capacity of the farm being taken offline. The wind farm was placed in outage for several days while repairs were made. Kings Point was brought back online on February 19, 2021.³⁰

After suffering two similar failures of the same component at the two different wind farms, Empire requested that the failed transformers be returned to their original manufacturer for a root cause analysis. Both failures were covered under the existing warranties, but due to the presence of additional identical transformers in the substations for North Fork Ridge and Kings Point,

²⁶ Direct Testimony of Todd Mooney, Schedule TM-1.

²⁷ The Direct Testimony of Todd Mooney represents that this is the current forecast, updated for the recently published IFS report.

²⁸ Case No. EA-2019-0010, North Fork Ridge December 2020 Construction Report (Public Version), page 3.

²⁹ Case No. EA-2019-0010, North Fork Ridge December 2020 Construction Report (Public Version), Exhibit G – “VT Failure & Circuit 12 Fault.”

³⁰ Case No. EA-2019-0010, Kings Point February 2021 Construction Report (Public Version), page 4.

Empire wanted any potential serial defects to be identified and corrected. While the investigation into the cause of the failure was underway, two spare voltage transformers were ordered.³¹

In late September/early October 2021, another similar transformer failure occurred at the Kings Point substation. The earlier investigations into the cause of the previous transformer failures had been inconclusive and the third failure prompted Empire to reevaluate the potential root cause(s). Staff became aware of this additional failure during discussions with Empire on October 8, 2021 and began its investigation into the event on the same day. At this time, no definitive conclusions have been made and Staff continues to monitor Empire’s investigation.

Surge Arrester Failures

During December 2020, there were three surge arrester failures reported at North Fork Ridge. The components were determined to be part of a defective lot and Mortenson filed a warranty claim with the manufacturer and replacement parts were ordered.³² It was determined that surge arrestors from the same defective lot were also installed at Kings Point. A plan was developed to replace the surge arrestors in such a way as to limit interruptions to wind farm availability.³³ All suspect components were replaced by the end of February 2021.³⁴

Staff Experts/Witnesses: Claire M. Eubanks, P.E., Charles T. Poston, P.E.

NEOSHO RIDGE

Overview

Neosho Ridge is located in Neosho County, Kansas. The project has a capacity of approximately 301 MW (139 turbines) and interconnects via an approximately 8-mile 345 kV generation tie line to a new substation on the Evergy Kansas Central, Inc.’s Neosho-to-Caney River 345kV transmission line.

The turbines utilized for the Project are ** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **35

³¹ Case No. EA-2019-0010, Kings Point February 2021 Construction Report (Public Version), page 4.

³² Case No. EA-2019-0010, North Fork Ridge December 2020 Construction Report (Public Version), page 3.

³³ Case No. EA-2019-0010, Kings Point December 2020 Construction Report (Public Version), page 3.

³⁴ Case No. EA-2019-0010, Kings Point February 2021 Construction Report (Public Version), page 3.

³⁵ Case No. EA-2020-0120, Empire response to Staff data request 0003.

ENGINEERING REVIEW

A. Summary

During the course of Staff’s engineering review for Neosho Ridge, several issues presented themselves either due to impacts to project costs and/or project schedules. The issues below do not represent the full extent of the engineering review performed by Staff, but were felt to be important enough to warrant additional discussion within this report.

Delays related to the consequences from the COVID-19 pandemic resulted in additional costs to the wind farm projects and impacted schedules. Interconnection costs were also subject to changes throughout the projects’ construction and were updated as the required studies were performed. Results of the SPP Definitive Interconnection System Impact Study phase 3 are expected by the end of 2021. ** [REDACTED]

[REDACTED]**

B. COVID-19 Impacts at Neosho Ridge

*** [REDACTED]

[REDACTED]

[REDACTED]***³⁶

** [REDACTED]

[REDACTED]

[REDACTED]**³⁸

³⁶ Case No. EA-2019-0010, Neosho Ridge February 2020 Construction Report (HC Version), page 2.

³⁷ Engineering, Procurement and Construction contractor

³⁸ Case No. EA-2019-0010, Neosho Ridge March 2020 Construction Report (Confidential Version), pages 2-3.

In August 2020, a number of COVID-19 cases were reported at the Neosho Ridge site. As a result of this increase in infection, a mobile COVID-19 testing site was brought in to identify additional cases. Individuals with positive test results were removed from the site and asked to quarantine. Before returning to work, the individuals were required to be free of symptoms and show proof of a negative COVID-19 test.³⁹

The disruptions caused by COVID-19 resulted in increased costs at Neosho Ridge. It is estimated that delays attributable to COVID-19 resulted in additional costs of *** [REDACTED] ***.⁴⁰ For Neosho Ridge, the COVID-19 related cost increases represent ** [REDACTED] ** of the original budgeted cost.

Interconnection and Network upgrades

Empire executed IGIA⁴¹ with SPP in October 2020. On April 8th, 2021, SPP posted the Definitive Interconnection System Impact Study (DISIS-2017-001) Phase 2 Report. The Phase 2 results for projects included in Group 8 are being re-studied, due to projects within this Group dropping from the queue. Since Neosho is included in Group 8, the Phase 2 results are being restudied⁴² and draft results were posted to the SPP website on October 8, 2021. Phase 3 study results are expected by the end of 2021.⁴³ The IGIA will terminate upon the effective date of a final GIA that has been accepted by FERC and/or reported in the Transmission Provider's Electric Quarterly Report.⁴⁴ Staff will update the Commission regarding the status of a finalized GIA in a subsequent round of testimony if rate case timing and finalization timing allow.

Construction Issues at Neosho Ridge

** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

³⁹ Case No. EA-2019-0010, Neosho Ridge August 2020 Construction Report (Public Version), page 2.

⁴⁰ Case No. ER-2021-0312, Empire Response to Staff Data Request 257.

⁴¹ According to SPP tariff Attachment V, Interim Generator Interconnection Agreement (Interim GIA) shall mean the form of interconnection agreement applicable to an Interconnection Request pertaining to a Generating Facility to allow interconnection to the Transmission System prior to the completion of the Interconnection Study process.

⁴² Case No. EA-2019-0010, Neosho Ridge April 2021 Construction Report, page 6.

⁴³ Case No. EA-2019-0010, Neosho Ridge April 2021 Construction Report, page 6.

⁴⁴ SPP - Open Access Transmission Tariff, Sixth Revised Volume No. 1 - Attachment V Generator Interconnection Procedures, Appendix 8.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **45 *** [REDACTED]

[REDACTED]

[REDACTED] 46***

*** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] ***

CONSTRUCTION AUDIT

Staff reviewed the following documents during the audit process:

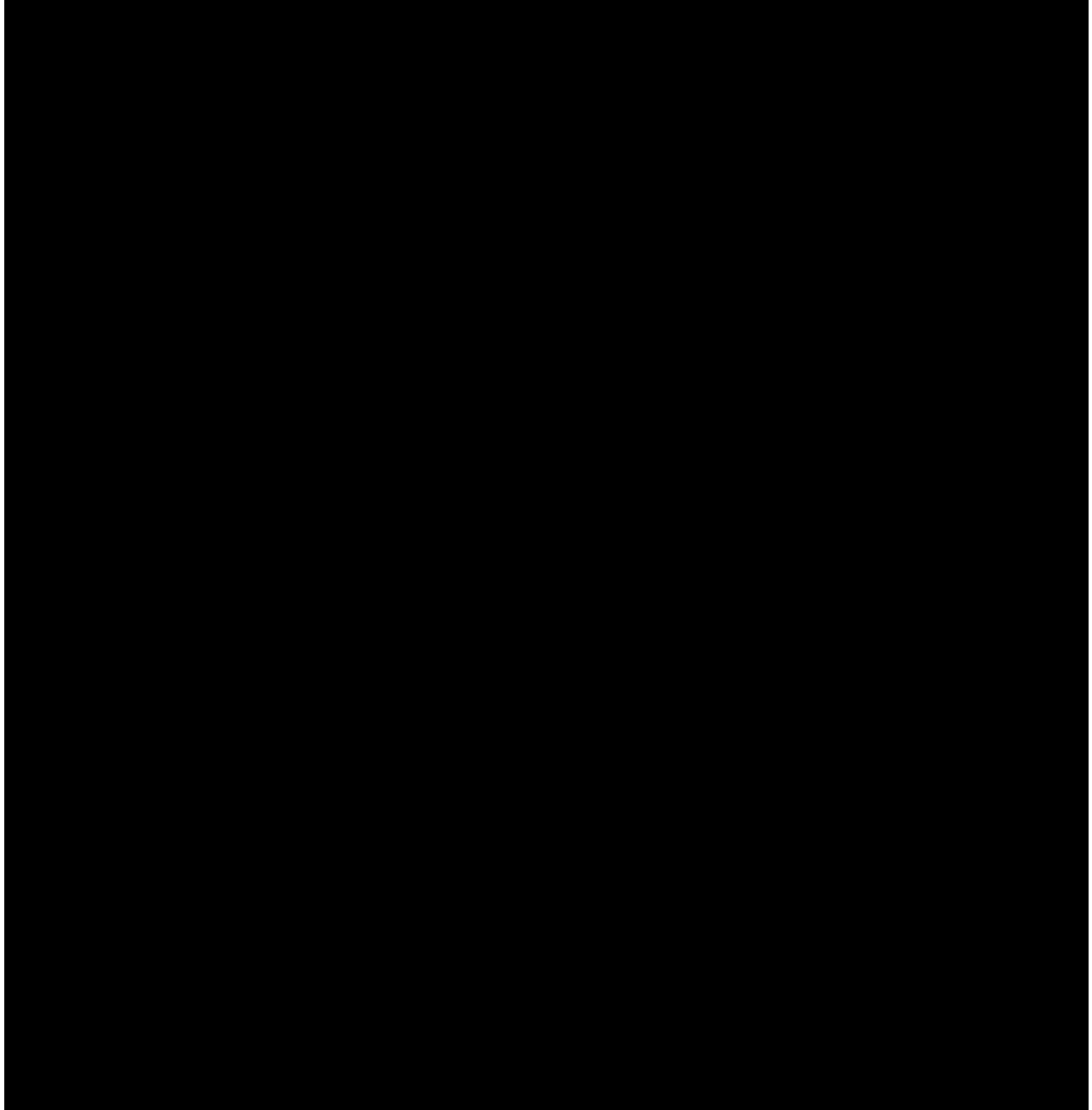
1. Project monthly reports
2. Key vendor contracts
3. Empire District Electric Board of Director Minutes
4. Work Orders
5. Invoices
6. Change Order Requests
7. Internal Procedures and Policies for Empire and Liberty

⁴⁵ Case No. EA-2019-0010, Neosho Ridge November 2019 Construction Report, page 6.
⁴⁶ Case No. EO-2020-0120, Empire Response to Staff data request 27.1.

8. Joint Venture weekly meeting minutes

9. Data Request Responses in Case No. EO-2020-0120.

Staff reviewed the final costs as of June 30, 2021 and the budgeted costs. The original budgets and updated costs as of June 30, 2021⁴⁷ are listed below:



⁴⁷ Per Response to OPC Data Request No. 8037.

Part of the wind farm costs were to be borne by Empire and the tax equity partners but Empire also had costs that were to be borne by Empire solely. The tax equity partners paid a total of ** [REDACTED] ** for the three wind farms, which approximates ** [REDACTED] ** of the total costs of the wind farm. Empire has recorded in its plant records the following amounts for each wind farm:

Project	Kings Point	North Fork Ridge	Neosho Ridge	Total
Plant-in Service	\$149,236,430	\$137,997,628	\$304,227,558	\$591,461,816

Staff is continuing to work with Empire to reconcile the final amounts that were recorded as Empire only ownership costs and where those amounts are booked, and will provide that reconciliation in its rebuttal testimony.

Market Price Protection Mechanism

As part of Case No. EA-2019-0010, the Commission approved the Market Price Protection Mechanism (MPPM) that was attached as Appendix B to the Non-Unanimous Stipulation and Agreement in that case. The MPPM provides for the sharing of risk between customers and shareholders if the wind projects do not generate enough revenue to exceed the revenue requirement of the wind projects. The MPPM goes into effect on the first day of the month after the effective date of rates for this current case and will remain in effect for 10 years following the effective date of rates for this proceeding.

The MPPM compares the amount of revenue generated from sales⁴⁸ from each wind project into the SPP Integrated Marketplace to the revenue requirement associated with the wind projects. For each of the ten years (guarantee period) the amount of Annual Wind Value (AWV)⁴⁹ will be shared 50/50 between the ratepayers and the shareholder.

If at the end of the ten years the total Annual Savings Value (ASV)⁵⁰ is a negative amount, then a regulatory liability will be established and the liability will be amortized starting with the

⁴⁸ As well as the value of replacing the energy from Elk River and Meridian Way purchased power agreements (PPAs) once they have expired.

⁴⁹ AWV = SPP IM sales revenues +PPA Replacement Value – Wind Revenue Requirement.

⁵⁰ ASV= AWV* 50%.

effective date of rates in the first rate case after the end of the guarantee period. If the ASV exceeds \$52,500,000 (Missouri jurisdictional) at the end of the 10 year period, the treatment of the amounts above that shall be determined in the first rate case after the end of the guarantee period. If the wind projects perform as projected and produce more revenues than the revenue requirement of the projects, the customers retain 100 % of the benefit.

The depreciation rates set in this case for the wind projects will be used in the calculation of the wind revenue requirement. Also, the authorized equity return, the authorized capital structure, and the incremental debt cost from this case will be used in this calculation until the next rate case.

Staff Expert/Witness: Kimberly K. Bolin

IN-SERVICE REVIEW RECOMMENDATION

In-service criteria are a set of operational tests or operational requirements developed by the Staff to determine whether a new unit is "fully operational and used for service." The "fully operational and used for service" phrase comes from Section 393.135, RSMo. 2000, a statute that was adopted by Initiative, Proposition No. 1, on November 2, 1976. Section 393.135, RSMo. 2000, provides as follows:

Any charge made or demanded by an electrical corporation for service, or in connection therewith, which is based on the costs of construction in progress upon any existing or new facility of the electrical corporation, or any other cost associated with owning, operating, maintaining, or financing any property before it is **fully operational and used for service**, is unjust and unreasonable, and is prohibited. [Emphasis added]

Included in the April 5, 2019 Non-unanimous Stipulation and Agreement, approved by the Commission in EA-2019-0010, was an agreement that the Wind Projects must satisfy each of the in-service criteria, which were included as an Appendix. The in-service criteria are:⁵¹

⁵¹ a. "Wind Project" shall mean a collection of completed wind turbine generators aggregated into one point of interconnection to the grid.
b. "Energy Export Facilities" shall mean those facilities that interconnect the wind farm generator step-up transformer high voltage terminals to the Interconnection Point.
c. "Predicted Mean Turbine Hub-height Wind Speed" shall mean the mean wind speed at the turbine's hub height as predicted in the pre-construction wind resource assessment.
d. "Pre-construction wind resource assessment" shall mean the third party financeable wind resource assessment specific to each site.

1. All major construction work shall be completed.
2. For each wind turbine to be considered for inclusion in rate base, the criteria in part [3, 4, 5, 6, and 7] shall have been met.
3. Mechanical completion has been achieved, meaning:
 - a. The turbine and its support tower are assembled, erected, and installed in accordance with the turbine supplier's technical specifications and quality assurance procedures;
 - b. Utility has installed, or caused to be installed, all necessary communication facilities needed to achieve SCADA functionality; and
 - c. Each item on the Mechanical Completion Checklist has been satisfied and the turbine is ready to commence commissioning.
4. The turbine has been commissioned and a Commissioning Completion Certificate has been completed.
5. An operational test of the turbine as outlined in this part [5] has been successfully completed on at least ten percent of the total number of turbines in a Wind Farm. The operational test shall be completed using the plant SCADA and turbine-mounted sensing and monitoring equipment. Each tested turbine shall have sustained for two consecutive hours a power output of at least 90% of the turbine supplier's guaranteed output as determined by wind speed observed at or above the Predicted Mean Turbine Hub-height Wind Speed and the Air Density, subject to the following:
 - a. Failure of any turbine to achieve the operational test provided for by this part [5] shall mean that the turbine shall be repaired, if needed, and retested. In addition, the test population size shall be increased from ten percent to twenty percent and each of the tested turbines shall comply with this part [5].

e. "Air Density" shall mean the average air density at average hub elevation as determined by the wind resource assessment report or by field measurement equipment.

f. "Commissioning Completion Certificate" has the meaning given it in the Turbine Supply Agreement.

g. "Interconnection Facilities" shall mean those facilities that interconnect the Wind Farm generator step-up transformer high voltage terminals to the point of interconnection to the grid.

h. "Mechanical Completion Checklist" has the meaning given it in the Turbine Supply Agreement.

i. "Operating Data" shall mean the quantity of electricity produced by each Turbine, the average wind speed at each Turbine, and the output voltage at each Turbine, in each case on an hourly interval.

6. Additionally, sufficient Energy Export Facilities exist to carry the total net electrical capacity from the completed turbines into the distribution/transmission system and the turbines have been synchronized to the grid.
7. Review of Operating Data. The Company will provide Operating Data for each commissioned turbine and its review of such data. The Company's review will be certified by a Professional Engineer licensed in the State of Missouri.

North Fork Ridge

Staff reviewed the following items in its review of the above listed in-service criteria:

- Monthly construction reports filed in EA-2019-0010,
- Mechanical completion checklists for all 69 turbines,
- Commissioning Certificates for all 69 turbines,
- Turbine punchlist items and confirmation of completion,
- Performance data from 10% of the turbines,
- As-built one-line drawings of the point of interconnection and North Fork Ridge substation,
- Completed substation energization procedure, and
- Operating data.

Additionally Staff visited the site on January 29, 2021 and observed a portion of the site, including the on-site operations and maintenance building and a portion of the completed turbines. Additional detail regarding Staff's review is included in CME-1.

Staff recommends the North Fork Ridge Project be considered fully operational and used for service as of April 21, 2021.

Kings Point

Staff's review of the in-service criteria for Kings Point remains incomplete pending the receipt of additional information from Empire. Staff is currently waiting for documentation related to substation testing and the investigation and resolution of potential interconnection issues related to transformer failures. At this time, Staff has not confirmed Kings Point to have satisfied all of its in-service criteria. A recommendation concerning the in-service status of Kings Point and any

necessary adjustments will be provided in a later round of testimony within this proceeding. However, Staff recommends that for the purpose of developing a revenue requirement, Kings Point should be included as though it were in-service.

Neosho Ridge

Staff’s review of the in-service criteria for Neosho Ridge remains incomplete pending the receipt of additional information from Empire. Of particular issue within the scope of Staff’s analysis of the in-service criteria of Neosho Ridge is the term 3.c. of the agreed upon in-service criteria which states:

“Each item on the Mechanical Completion Checklist has been satisfied and the turbine is ready to commence commissioning.”

Staff reviewed data provided by Empire in response to Staff’s DR 182 and the documentation contained therein. Although full documentation of satisfaction of in-service criteria has not been received at this time, ** [REDACTED]

[REDACTED] **

** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] ** Staff has requested additional information and verification from Empire regarding the satisfaction of term 3.c. of the agreed upon in-service criteria and finalized SPP interconnection. Staff will continue to review information provided by Empire and will provide its recommendation concerning full or partial satisfaction of the MCC portion of the in-service criteria in a subsequent round of testimony. At this time, Staff recommends proceeding with the development of revenue requirement as though the Neosho Ridge project is in-service. Staff will provide an in-service recommendation when sufficient documentation is provided, or will recommend adjustments if such documentation is not received.

ALL ATTACHMENTS

HAVE BEEN DEEMED

HIGHLY CONFIDENTIAL

IN THEIR ENTIRETY