BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of The Empire District Electric Company for Approval of its Annual Energy Cost Adjustment ("ACA") Filing.	)))	Docket No. 22-EDPE-261-ACA

NOTICE OF FILING OF STAFF'S REPORT AND RECOMMENDATION (PUBLIC)

The Staff of the Kansas Corporation Commission (Staff and Commission, respectively) hereby submits a Report and Recommendation (R&R) dated October 6, 2023, recommending the Commission approve The Empire District Electric Company's (Empire's) Annual Energy Cost Adjustment (ACA) factor of $0.00362 per kWh for the 2022 calendar year.

WHEREFORE, Staff respectfully submits its Report & Recommendation for Commission consideration.

Respectfully Submitted,

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Dwight D. Keen, Commissioner
Annie Kuether, Commissioner

Laura Kelly, Governor

REPORT AND RECOMMENDATION
UTILITIES DIVISION

REDACTED VERSION
** [redacted] ** Denotes Confidential Information

TO: Andrew J. French, Chairperson
Dwight D. Keen, Commissioner
Annie Kuether, Commissioner

FROM: Jaren Dolsky, Auditor
Tim Rehagen, Senior Auditor
Chad Unrein, Senior Managing Auditor/FERC Affairs Specialist
Justin Grady, Chief of Revenue Requirements, Cost of Service and Finance
Jeff McClanahan, Director of Utilities

DATE: October 6, 2023

SUBJECT: Docket No. 22-EDPE-261-ACA – In the Matter of the Application of The Empire District Electric Company for Approval of its Annual Energy Cost Adjustment ("ACA") Filing.

EXECUTIVE SUMMARY:

The Empire District Electric Company (Empire) filed an Application requesting approval of its annual Energy Cost Adjustment (ACA). Empire is requesting an ACA factor of $0.00362 per kWh in order to recover $840,790 of under-recovered fuel and purchased power expenses from retail customers during the ACA period ending October 31, 2021. Staff conducted an audit of Empire's Application, as discussed below, and recommends approval of Empire's requested 2021 ACA factor.

BACKGROUND:

On December 27, 2021, Empire filed an Application requesting approval of its ACA. Attached as Appendix A, Schedules 1-3 to the Application is the annual calculation of the over/under recovery of energy costs for the Energy Cost Adjustment (ECA) year ending October 31, 2021. Appendix A, Schedule 2 shows a cumulative under-recovery of 2021 ECA costs in the amount of $840,790. Based on this under-recovery, Empire calculated an ACA factor of $0.00362 per kWh to be charged to Kansas customers. Charlotte T. Emery, Director of Rates and Regulatory Affairs for Liberty Utilities' Central Region, provided testimony describing the attachments included in the Application, the impact of the Southwest Power Pool (SPP) Integrated Marketplace (IM) on the ECA off-system profit factor, and the 2022 ECA energy cost forecasts. Todd W. Tarter, Senior Manager, Strategic Planning for Liberty Utilities' Central Region, provided testimony describing

the impact of the SPP IM on Empire's operations. Mr. Tarter also discusses Empire's fuel and purchased power procurement process.

On March 1, 2014, SPP implemented the Integrated Market (IM).[1] The IM is a regional day-ahead energy and operating reserve market featuring the following major functions:

- Day-ahead energy and operating reserve markets;
- Day-ahead and intra-day Reliability Unit Commitment processes;
- Real-time balancing market;
- Price-based, co-optimized energy and operating reserve procurement;
- Market-based congestion management processes including Transmission Congestion Rights and Auction Revenue Rights;
- Multi-day reliability assessment to manage the commitment of long-start resources; and
- Market Monitoring and Mitigation with an internal Market Monitoring Unit.[2]

With the implementation of the IM, Empire sells energy and operating reserves produced from its company-owned generating resources to SPP in the Day-Ahead (DA) and Real-Time Balancing Market (RTBM) and it purchases the energy and operating reserves it needs to serve its native load obligations on a daily basis. Revenues and expenses from the IM are recorded in FERC accounts allowed to be recovered under Empire's ECA tariff; therefore, Staff expanded the scope of the ACA audit in 2014 to include a review of Empire's participation in the SPP IM. Staff continues to monitor and review Empire's monthly market activity and performs a yearly review of controls, procedures, and performances as part of the annual ACA audit.

ANALYSIS:

Traditional Fuel and Purchased Power Review

Staff solicited from Empire, via formal discovery requests and e-mail correspondence, documentation supporting its Application and Attachment A, Schedules 1-3. Historically, Staff has met with Empire either in person or virtually to conduct a review of Empire's coal and transportation contracts. However, because of the retirement of the Asbury coal plant in March 2020, a review of Empire's coal and transportation contracts is no longer necessary.

Staff audited Empire's actual fuel costs for the following months: February, March, June and July 2021.[3] For these months, Staff conducted an audit of the Application that consisted of:

- Testing the accuracy of the monthly Settlement Computations;
- Ensuring the actual cost adjustment computed by the utility reflects the actual over/under recoveries and the actual sales to Kansas jurisdictional customers;
- Ascertaining that the actual fuel and purchased power costs recovered through the ECA are actual costs supported by vendor invoices and general ledger entries;
- Verifying that the ECA factor used to calculate the customer's bill agrees with the calculation that the Company files with the Commission; and

[1] *See* FERC, *Order on Compliance Filing*, January 29, 2014, Docket Nos. EL12-1179 and EL13-1173; http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20140129-3063.
[2] *Southwest Power Pool, Inc.,* 141 FERC ¶ 61,048 (2012) (October 2012 Order).
[3] Staff typically audits four months out of the ACA year. The four months usually consist of at least two months from the summer cooling season.

- Ensuring the ACA balance reflects the elimination of the gains/losses associated with financial instruments used to hedge the cost of natural gas and the sales of excess natural gas during the twelve-month ACA period ending October 31, 2021.

Staff would note that Empire's 2021 ACA was impacted by an extraordinary winter weather event, Winter Storm Uri, in February of 2021. Winter Storm Uri impacted natural gas prices from the extended period of extreme winter weather conditions across the Southwest Power Pool (SPP), the Midcontinent Independent System Operator (MISO), and the Electric Reliability Council of Texas (ERCOT) service territory, resulting in extraordinary fuel and purchased power costs incurred to provide continued electric service to retail customers. Due to the weather event, the Kansas Corporation Commission (KCC) took the extraordinary step of issuing an Emergency Order on Monday, February 15th, 2021, allowing for a deferral of extraordinary costs into a regulatory asset for the Commission's review. In 2021, Empire deferred a total of $11,257,535 for Kansas-jurisdictional customers into a regulatory asset. Empire filed a financial plan to minimize the financial effects of Winter Storm Uri and reviewed the extraordinary fuel and purchase power costs incurred for Kansas customers that was reviewed by the KCC for recovery in Docket No. 21-EPDE-330-GIE. On June 1, 2023, the Commission approved a Settlement Agreement for recovery of fuel purchase power and related expenses, totaling $10,806,957 (prior to carrying charges) over a 13-year period, beginning June 1, 2023. The KCC approved a charge of $0.00573 per kWh, which equates to an average monthly impact of $5.73 for residential customers based on average residential customer kWh usage. Empire normalized its February's fuel and purchase power costs, which are included in the calculation of Empire's ECA for 2021.

In its audit, Staff discovered an error in the ECA calculation related to the calculation of an ACA credit for an Empire settlement with the Department of Energy/Southwestern Power Administration (SWPA) for lost generation revenue. The SWPA settlement was the result of a decision made by the Army Corp of Engineer's decision to increase the water level at Bull Shoals Lake, which impacted Empire's Ozark Beach Hydro Power Plant. The decision to lower the water level resulted in decreased water flow over Empire's dam for the power plant, which diminished Empire's generating capacity for hydroelectric generating station. As a result, Empire reached a settlement of with SWPA for payment of $25,563,700, of which the Kansas jurisdictional allocation was $1,259,730 or 4.7423%.

The ECA credit was the result of a Stipulation and Agreement (S&A) approved in Empire's 2011 rate case filed in Docket No. 11-EPDE-856-RTS (11-856 Docket). The S&A stated that Empire shall amortize the net benefit of the Kansas jurisdictional portion of the SWPA payment of $783,418 be amortized over a ten-year period and the monthly amortization of $6,529 be returned to customers through a reduction in Empire's monthly energy costs that is recovered in Empire's ECA.[4] When Empire started to include the net credit to the ECA in January of 2012, Empire

[4] *See* Attachment 1: Stipulation & Agreement, page 5, attached to KCC Order Approving S&A in the 11-856 Docket filed on December 21, 2011. While not stated specifically in the Order, Empire's KS-jurisdictional payment from the SWPA settlement totaled $1,259,730 and resulted in Empire recording a regulatory liability for the deferred revenue of $1,259,730 and an offsetting ADIT balance of $476,312 for the tax effect. As a result, Empire amortized these balances on its books via a monthly credit of $10,489 to fuel expense with the offsetting tax effect of $3,969, resulting in a net monthly credit to the ECA of $6,529. The values provided were based on the KCC's Order, as Empire correctly adjusted the tax values subsequent to the enactment of the Federal Tax Cut and Jobs Act effective January 1, 2018, and House Bill No. 2585 for the regulated utility exemption from Kansas state income taxes.

incorrectly applied the Kansas-jurisdictional allocator in the ECA to the SWPA credit, which had already been calculated on a Kansas-jurisdictional basis. As a result, Empire refunded approximately $17,235 to Empire's retail customers or 4.6% of the total credit of $372,660 that should have been credited back to customers from January of 2012 through July of 2020.

Staff requested Empire provide a calculation and workpaper analyzing the actual portion of the SWPA credit that had been provided to customers. In its analysis, Empire found that the SWPA credit was inadvertently included in the cost of service in Empire's 2019 rate case in Docket No.19-EPDE-223-RTS (19-223 Docket), which had an effective date of rates of August 1, 2020. Empire provided Staff with documents to verify that neither Empire nor Staff had adjusted the cost of service for the SWPA credit, resulting in Empire's continued refund of approximately 4.8% of the SWPA credit in its ACA filings and included the full balance of the credit against the monthly on-going cost of service since implementing the 19-223 Docket rates in August of 2020. Through December 31, 2021, Empire has credited $129,296 of the SWPA credit of $783,418.

Staff and Empire conducted a conference call to discuss the audit materials provided by Empire and determine a process to calculate and true-up any remaining balance of the SWPA credit. Empire and Staff agreed to allow the SWPA credit to continue to flow-through Empire's base rates with Empire tracking the balance of the credit that Kansas customers received. At the time of next rate case, Empire will provide the remaining balance or over-collection of the SWPA credit and determine a method and timeline for recovery of any under/over collection.

Aside from the SWPA issue, Staff found no other material irregularities from its audit of the information provided.

SPP Integrated Marketplace Review

As referenced in the Background Section, Staff expanded the ACA audit to include the review of Empire's participation in the SPP IM during 2020. Staff issued formal discovery requests to document Empire's processes and procedures involving its day-to-day operations within the SPP IM.

The objectives of Staff's audit of Empire's participation in the IM were as follows:

1. Review Empire's process and control procedures in place to validate the accuracy of SPP invoices and statements.
2. Examine Empire's management of market performance and operational risk within the SPP IM.
3. For the months being audited in this year's ACA audit, evaluate whether Empire has accurately accounted for Kansas' actual share of IM revenue and costs pursuant to the provisions of the current ACA tariff.
4. Examine Empire's all-in ECA cost calculation and determine whether Empire's participation in the SPP IM is providing benefits to Empire's Kansas ratepayers.
5. Analyze the market performance of Empire's coal units and review trends in the volume of self-committed MWhs and number of hours Empire's coal units were self-committed in the SPP IM.

Processes & Control Procedures

To examine Empire's control procedures including the verification of its SPP IM billing statements, Staff issued formal discovery requests based on the SPP audit findings and the review of fuel and purchased power expenses detailed in Docket No. 21-EPDE-198-ACA (21-198 Docket).

Through discovery, Staff requested that Empire review its software applications for interacting with the SPP IM and discuss their functionality. In early 2018, Empire implemented the Adapt2 Solutions (Adapt2) software suite as its Application Programmable Interface following its acquisition by Liberty Utilities. Empire continued to use the interface for all its marketplace interactions with the SPP IM in 2021. Empire stated Adapt2 provided increased functionality allowing for advanced data analytics with more sophisticated bid and offer templates while lowering Empire's software maintenance costs. In 2021, Empire developed and implemented an in-house application that communicates with SPP's Outage Application Program Interface every five minutes looking for an Out of Merit Energy (OOME) status on Empire's generation resources. Any OOME's for Empire's resources get logged to a database and displayed in a PowerApp accompanied by an audible tone for traders monitoring the app, which improves the monitoring process and ease of notification.

As part of the audit, Empire provided Staff with documentation of its workflows for submitting generation offers and bidding in its load in the day-ahead and real-time balancing markets. In its confidential response to KCC Data Request No.17, Empire provided Staff with detailed work flow charts that documented Empire's processes, procedures, and controls encompassing its SPP marketplace activity and its trading process flow. In previous audits, Staff has examined Empire's processes for shadow settlement, verification of settlement statements, and booking the monthly activity into the General Ledger. Empire uses its shadow settlement system and meter data to verify SPP IM activity independently and compares the resulting solution against the SPP settlement statements. The SPP settlement statements contain all of Empire's net revenue and charges related to its market activities for the operating day by charge type. If the shadow settlement calculation deviates from the SPP Invoice, Empire reviews the internal shadow settlement calculation and meter data and, if necessary, files a dispute in the SPP marketplace portal.

Staff found that Empire has robust control procedures in place to verify the accuracy of the settlement statements and invoices it receives from SPP for its activity in the IM. Additionally, Empire has a comprehensive process in place to verify meter data with internal and external counterparties and with SPP. Furthermore, Empire has a defined process in place to submit and monitor disputes with SPP.

Managing Market Performance and Operational Risk

Empire's actual processes, forecasting models, and strategies for managing its day-to-day market performance and operational risks are complex and highly confidential. Empire's market data and company policies are available upon request if the Commission desires to review the discovery and policy documents.

Staff issued multiple discovery requests to perform a high-level evaluation of Empire's performance tracking and risk mitigation strategies. Performance tracking and risk mitigation drive overall market performance and minimize the operating costs that are passed on to utility ratepayers. The operators' ability to capture incremental market sales when market prices support a unit's operation can offset a unit's production costs. Additionally, an operator can elect to purchase power when wholesale energy prices are low, minimizing its own production costs and energy output during uneconomic operating periods. Empire's transactions for the purchase or sale of energy and operating reserves primarily occur within the SPP IM; however, Empire may contract bilaterally with other counter-parties if an opportunity presents itself within the market. While Empire did not execute any new bilateral contracts with external parties in 2021, Empire maintains a purchase power agreement with the Missouri Joint Municipal Electric Utility Commission (MJMEUC), which Empire operates under SPP's methodology for Combined Interest Resources.

From an operational perspective, Empire relies on a number of forecasting techniques, its own seasonal operational history in the SPP IM, and back-end market performance analysis to manage the demand of its system, resource availability, cost of fuel, variable operating and maintenance costs, and congestion cost exposure, which ultimately drive the all-in costs of the ACA. The availability of wind resources and the cost of natural gas can significantly impact the overall costs of wholesale energy in the SPP IM. When market events, such as the Winter Storm Uri event, generation availability, cost of fuel, and wind conditions will factor in to the wholesale energy price, which can increase exponentially with system scarcity. While some of these cost factors fall outside of the normal operator's control in a Winter Storm Uri event, Empire's operational analysis can allow the utility to actively manage the day-to-day profitability of its generation, the costs for load, and manage the strategic risks of operating in the SPP IM.

In its audit, Staff inquired on Empire's management of daily load purchases and generation costs in the SPP IM. Empire utilizes wind and weather forecasts and its past operational history to project its daily retail load and adjust its demand bidding strategies as congestion concerns arise. Empire will actively update and manage its generation offers to recover its fuel and variable operations and maintenance expenses to recover its variable generation costs in accordance with the SPP market protocols.

In response to KKC Data Request No. 21, Empire states that the majority of the variable operating maintenance costs captured in generation offers are associated with Long Term Service Agreements (LSAs). Empire must submit its LSA contracts to the SPP Market Monitoring Unit (MMU) to have the costs included in the mitigated offer calculation via the maintenance adder. With regard to its generation profitability, Empire employs an internal production cost model to monitor the profitability of units in the SPP IM. The model includes numerous inputs from DA revenue from sales and ancillary services, TCR revenue, DA demand bid expenses, and real-time generation outputs and ancillary production, estimated production costs, calculated real-time load and estimated make whole payments. This model is updated daily and used to construct month-end management reports. These management reports provide checks against market settlement data and fuel and purchase power expenses recorded by Empire's plants. Empire model views the DA and RTBM as a complete revenue stream rather than separating the two markets, which improved accuracy in tracking the profitability of its generating units.

Empire continues to use virtual transactions[5] to manage its wind generating resources in the SPP IM. The virtual instruments are used to hedge risks and volatility in the RTBM. Empire has documented its strategy for managing its power and natural gas commodity risk in its Risk Management Policy and maintains a Trading Authorization Policy for employees involved in sales and procurement of power and natural gas. While the details of Empire's strategies are confidential due to their competitive and market-sensitive nature, Staff found that Empire has developed strategies that allow it to manage risks (including risks of recovery of variable O&M costs and fuel cost changes) and evaluate profitability to be successful in the IM.

For congestion management, Empire uses a software product from YES Energy to provide comprehensive ISO market data and visual analysis tools to help develop its strategies for congestion hedging. Empire's analysts also use internal tools to monitor daily TCR value, marginal congestion costs, and SPP auction clearing prices. The data helps evaluate their portfolio positions, evaluate potential sales of existing TCR positions, as well as provide management with portfolio performance. In its discovery responses, Empire discussed its evaluation processes for ARRs by analyzing source and sink parings along its native paths. Empire will nominate only source-sink pairings that have demonstrated consistently favorable values from a historical perspective. For favorable pairings, Empire will generally self-convert these ARRs into TCRs, unless the nomination would cause Empire to be over-hedged along a native path. Additionally, Empire may forego self-conversion of the ARRs and place protected bids against the awarded ARR in the monthly TCR auction. Empire's decision to monetize certain ARR pathways came down to a few different factors. The primary factors was annual "foreign-path" awards that were awarded in round three of the annual auction based on recommendations from ACES Power, a consultant that assisted Empire with the annual process. The other factor that Empire considered in its decision to self-convert the ARR stemmed from either transmission or generator outages that increased the risk of carrying those source-sink pairs into the operating month.

As part of the performance audit, Staff requested Empire provide an analysis of its congestions costs and TCR revenue generated from its TCR portfolio. In 2021, Empire's congestion cost exposure in the day-market totaled $25.1 million while the revenue generated from its TCR positions totaled $32.4 million. When compared to the 2020 ACA filing, Empire experienced increases in both the TCR revenue and its total congestion costs for 2021. For 2020, Empire's congestion cost totaled $16.1 million while the revenue generated from its TCR portfolio totaled $19.9 million. As such, Empire's total TCR portfolio hedged roughly 129.4% of its total congestion costs in 2021, compared to the TCR portfolio hedging 123.5% of its total congestion costs in 2020. Net of the ARR close-out and uplift adjustments, Empire netted $8,985,386 of TCR value in excess of congestion costs in 2021, compared to $5,262,682 in 2020.

Empire actively manages its TCR positions as a portfolio and evaluates its congestion exposure to determine if monthly TCR auction purchases are necessary to close any gaps between awarded TCRs and planned day-ahead positions. A breakdown of Empire's TCR portfolio revenues of $19.9 million and the percentage of revenues the congestion product type contributed to the TCR

[5] Virtual transactions are DA market instruments that settle financially and have no physical energy backing. These transactions are a proposal by a Market Participant to **buy or sell** energy at a specified price, Settlement Location and period of time in the DA and settles at the Settlement Location and period of time at the market price in the RTBM.

portfolio includes: Long-term TCR (LTCR) positions of $22.1 million or 68.22% of the portfolio revenue; converted TCR positions of $9.6 million or 29.6% of the portfolio revenues; Non-converted ARRs of $693,195 or 2.1% of the portfolio revenues; and the TCR closeout process totaling $1.6 million.

In Staff's evaluation, Empire has developed strategies for evaluating market performance and managing the risks of operating in the SPP IM. Empire tracks the past performance of DA and RTBM for its generation units and has a defined strategy for bidding in its load. Empire has software solutions and market strategies in place to evaluate its congestion exposure and appropriately hedge theses costs with its TCR portfolio. The strategies employed by Empire appear to be successful as Empire's TCR positions hedged 129.4% of its total congestion costs and netted approximately $9.0 million in TCR revenue in excess of its congestion costs in 2021.

Considering all of the above, Staff finds that Empire diligently managed the risks and profitability associated with the IM during 2021 and is taking the steps necessary to be successful in the IM.

ACA Audit of Revenues and Costs

Prior to the go-live date of the IM, Staff implemented a monthly review process to monitor the IM activity of the three vertically integrated, investor-owned electric utilities in the State of Kansas. This process involves the submission of monthly financial reports (Monthly Activity Report) to the Kansas Corporation Commission's Utilities Division that details each utility's operations in the SPP IM.[6] The Activity Reports provide a summary-level view of how the electric utility is faring in the marketplace and detail all SPP IM activity by charge-type. For example, Staff can view at a glance the amount of MWhs and average price of day-ahead or real-time asset energy Empire sold into the IM. Likewise, the Activity Reports summarize the energy and operating reserve products Empire purchased from the IM for the month, the MWhs associated, and the net dollar impact of those products. The Activity Reports allow Staff to monitor utility performance in the SPP IM, track trends in the wholesale energy market, and serve as a useful audit tool during the ACA audit. Finally, these reports provide the foundation for reconciling the monthly IM charges from SPP settlement statements and invoices to the journal entries recorded in the Company's general ledger. This data ties back to Empire's ACA Application and true-up of the over/under recovery of actual costs.

In addition to the Monthly Activity Report, Staff receives a monthly report from each Kansas jurisdictional electric utility detailing any virtual transactions undertaken in the SPP day-ahead market (Monthly Virtual Transaction Report). Staff reviews these reports to ensure that only virtual transactions with a legitimate hedging basis are recovered from Kansas ratepayers.

During Staff's audit of Empire's participation in the IM, Empire provided Staff with a reconciliation that documented and verified all Empire IM activity for the audited months. This reconciliation relied on the SPP IM Monthly Activity Report discussed above, weekly SPP settlement statements, and a reconciliation spreadsheet prepared by Empire that tied net general ledger accounting data for the month back to the corresponding settlement statement and the

[6] Empire and Evergy Metro each voluntarily agreed to the reporting requirements originally approved by the Commission for Westar Energy in Docket No. 14-WSEE-208-TAR (14-208 Docket). *See* items 15 and 16 in Attachment A of the Order Approving Tariff Revisions issued on February 25, 2014, in the 14-208 Docket.

Monthly Activity Report. Staff verified the weekly settlement invoices and compared the invoice totals with those in the invoice reconciliation spreadsheet. Staff also verified Empire's IM purchase and sales amounts were as presented in the Monthly Activity Report.

In Staff's review of Empire's IM revenue and costs, Staff determined that the SPP settlement statements and the Monthly Activity Reports were accurately reported on Empire's general ledger and tied to Empire's ACA Application for the sample months audited.

Analysis of All-in Fuel Cost

In each of the previous ACA audits, Staff presented a Kansas retail all-in fuel or total ECA cost calculation. The calculation includes the production fuel costs, purchased power expense, emission allowances, less revenues generated from its SPP IM activity, which is then, apportioned to Kansas based on delivered MWh. Staff used the metric for performance tracking to guide discovery requests and determine underlying trends or cost drivers that impact market performance. Outside factors, such as SPP wholesale energy prices and Kansas demand for energy, can drive changes in the total ECA costs passed on to its Kansas-jurisdictional ratepayers. For the 2021 ACA year, Empire's ECA eligible costs with the removal of the extraordinary costs of Winter Storm Uri (apportioned to Kansas) totaled $6,878,302, which represented a year-over-year increase of $2,010,375 or 41.3%. During this period, Empire's total kWh delivered to Kansas totaled 232,132,688 kWh, which equated to an increase of 6.03% year-over-year. The total Kansas fuel and purchased power per kWh totaled $0.02963, which represented a year-over-year increase of 33.26%.

Empire – ECA Costs

Staff issued discovery requests asking Empire to provide a cost analysis and discuss drivers for the year-over-year decrease. In its response to KCC Data Request No. 28, Empire provided a narrative, confidential supporting workpapers, and management reports that analyzed the cost drivers of the year-over-year increase in Empire's fuel and purchase power costs. Empire's data was provided on a total company basis and included the impact of SPP's Winter Weather Event from Winter Storm Uri. In the analysis below, Staff discusses the cost drivers of Empire's ACA Application and its public response to KCC Data Request No. 28. Empire provided limited confidential data on natural gas and fuel pricing in its confidential workpaper: "YOY Fuel Costs – 2020 – 2021," due to the competitive nature of the SPP IM.[7]

The increase in Empire's total eligible ECA costs was driven by higher SPP wholesale energy prices, due to significant increases in the fuel price for natural gas in the SPP region in 2021. As previously stated, Empire included the impact of the Winter Weather Event in February of 2021, which heavily skewed the market data for their fuel and purchase power costs and revenue from its generation sales into the SPP IM. In comparison to 2020, natural gas prices and the wholesale price of energy in SPP increased substantially during Winter Storm Uri and remained higher through the close of 2021. In 2021, Empire's average cost of natural gas was ** [redacted]

[7] In the following section of the Report, Staff analysis includes confidential market data from Empire's workpaper entitled "YOY Fuel Costs – 2020-2021 Confidential.xls." This confidential workpaper contained Empire's SPP IM data for the fuel costs of its coal and natural gas generating units and native load costs for 2020 and 2021. Due to the confidential designation of Empire's workpaper, Staff provided SPP IM data for natural gas costs and wholesale energy prices contained in SPP's State of the Market Report for 2021, which is published yearly by SPP's Market Monitoring Unit.

[redacted] ** inclusive of Winter Storm Uri, which compared to ** [redacted] ** in Empire's 2020 ACA filing or an increase of ** [redacted] ** year-over-year. As such, Empire's total generation production costs increased by more than $170.6 million year-over-year. When wholesale price of energy increased, Empire's native load costs and its generation revenue increased significantly in 2021. Empire's purchased power costs to serve its native load costs increased by $247.5 million year-over-year, which was partially offset by an increase of $147.4 million in its generation revenue from sales into the SPP IM. In total, Empire experienced a net increase of $270.7 million in the all-in energy costs (fuel and purchase power, net of energy sales) on a total company basis. Empire's Kansas-jurisdictional customers were allocated roughly $13.2 million of the increase in fuel and purchase power, net of generation sales, of which $11.2 million was deferred into a regulatory asset for cost recovery during Winter Storm Uri. The remaining increase of $2,010,375 was included for recovery in the ECA.

For the 2021 ACA period, Empire's total company billed energy usage totaled 4,805,675,377 kWh, which represented a year-over-year increase of 48,893,209 kWh or roughly a 1.03% increase in its total company load. Empire's Kansas jurisdictional customers' billed energy usage totaled 232,132,688 kWh, increasing by 6.03% year-over-year. The increase in ECA eligible expenses and billed kWh usage to serve Kansas customers resulted in a total ECA cost of $0.02961 per kWh inclusive of Winter Storm Uri's cost deferral ($0.07813 per kWh with Storm Uri costs), which equated to an 33.26% increase in eligible ECA cost per kWh year-over-year.[8]

SPP Market Impact

In its State of the Market Report for 2021, the MMU addressed the impacts of Winter Storm Uri on the SPP IM and its contribution to other important market mechanisms, including natural gas prices, day-ahead and real-time market prices, increases in make whole payments. Staff will also address the impacts of wind generation resources' contribution to SPP's total generation production and the increase in negative pricing intervals in 2021.

The Winter Weather Event resulted in significant increases in natural gas demand while natural supply from gas production and processing centers were impacted by freezing conditions, limiting the supply throughout the Winter Weather Event. In response, natural gas storage reserves were drawn upon to aid in filling the gap in the demand for natural gas vs. the production and processing supply during the event. As a result of these market dynamics, natural gas prices trended upward throughout 2021, as natural gas storage reserves were replenished prior to the 2022 Winter Season. The economic impact of natural gas prices were felt throughout the regions of SPP, MISO, and ERCOT.

Wholesale energy prices in SPP and other RTO and ISO markets are indirectly tied to pricing fluctuations in the regional natural gas markets.[9] In its Annual State of the Market Report for 2021, the MMU explained that the average cost for natural gas price indexed at the Panhandle Eastern Pipeline market hub doubled in 2021 to $3.44 per MMBtu (excluding Winter Storm Uri), from a $1.72 per MMBtu in 2020.[10] If the Winter Weather Event was included, the average price

[8] *See* Empire's confidential response to KCC Data Request No. 25.
[9] The MMU has primarily used the Panhandle Eastern Pipeline as an index price in its Annual State of the Market Reports.
[10] *See* the SPP Annual State of the Market Report for 2020, page 2.

of natural gas on Panhandle Eastern Pipeline totaled $4.96 per MMBtu in 2021, increasing by roughly 190% year-over-year.[11]

With the inclusion of Winter Storm Uri, day-ahead market prices averaged $63.26/MWh in 2021, increasing 257% from $17.69/MWh in 2020.[12] Excluding the Winter Weather Event, day-ahead market prices averaged $26.62/MWh, up 50% year-over-year.[13] SPP's real-time prices averaged $36.97/MWh with the impacts of Winter Storm Uri, increasing 122 percent from $16.62/MWh in 2020.[14] With the exclusion of the Winter Storm Uri, SPP's real-time prices averaged $24.64/MWh, increasing by 48% from SPP's average real-time market price in 2020.[15]

Regarding the impact of the Winter Weather Event on make-whole payments in 2021, the MMU stated,

> Another effect of the February winter weather event was that make-whole payments in 2021 were up markedly over 2020. Day-ahead make-whole payments for 2021 totaled $978 million, up from $53 million in 2020. Of the 2021 day-ahead make-whole payments, 93 percent of those occurred during February. Real-time make-whole payments totaled $354 million for 2021, up from $51 million in 2020. Sixty-seven percent of 2021 real-time make-whole payments occurred during February. Removing February from the 2021 totals, day-ahead make-whole payments totaled $75 million, up 41 percent from 2020 and real-time make-whole payments totaled $116 million, up 128 percent from 2020.[16]

Finally, the MMU's noted its concerns with the impact of negative pricing intervals in the SPP day-ahead and real-time markets, primarily driven by wind resources output when the SPP IM demand for energy is low. In 2021, wind generation as a percentage of total generation represented 35% of SPP's total generation production, compared to 31% percent of total generation production in 2020.[17] With the increase in wind generation, the frequency of SPP's negative pricing intervals increased by 70% in the day-ahead market and 37% in the real-time market in 2021.[18] The day-ahead market resulted in negative pricing just over 8% of all pricing intervals, which is up from 4.5% in 2020.[19] The RTBM market experienced an increase in negative pricing intervals from just under 11% of all market intervals in 2020 to just under 15% of all market intervals in 2021.[20]

Impacts of Winter Storm Uri on Empire's ACA Costs

Utilities were tasked to maintain utility operations for the benefit of its customers during these extreme weather conditions. While natural gas price and availability drove up the costs to purchase gas and wholesale energy, which were largely outside of the utility's direct operational control. Other key factors that influenced the financial exposure of the utility and its ratepayers include: the utility's generation portfolio, resource availability, gas purchasing exposure to the spot market,

[11] *See Id.*
[12] *See Id,* page 145.
[13] *See Id.*
[14] *See Id.*
[15] *See Id.*
[16] *See Id,* page 19.
[17] *See Id, page 6.*
[18] *See Id, page*
[19] *See Id.,* page 141.
[20] *See Id.*

pipeline performance of its gas transportation system, and the availability of any excess generation capacity to produce off-system sales to offset these costs. Staff provided a Report and Recommendation reviewing Empire's cost drivers and plan for cost recovery in General Investigation in Docket No. 21-EPDE-330-GIE.[21]

Prior to 2021, Staff had observed an approximate decline of 24.3% in Empire's all-in ECA cost per kWh from the start of the SPP IM in 2014. During this period, Empire's ratepayers benefitted from Empire's access to low wholesale energy prices to serve its Kansas retail customers. In 2021, Empire's normalized all-in ECA costs (with Uri removed) totaled $0.0296 per kWh, for comparison Empire's all-in ECA costs under the old Energy Imbalance Services (EIS) Market was $0.0294 per kWh for the ECA period of 2013. While Empire's total ECA eligible costs increased year-over-year, the primary cause of Empire's cost increases resulted from the significant increase in the natural gas prices that occurred in 2021, following the impact of the Winter Weather Event.

Staff provided a detailed analysis of the impacts of Winter Storm Uri on Empire's ratepayers in Docket No. 21-EPDE-330-GIE. The cost analysis Empire provided in response to KCC discovery was consistent with the SPP IM data presented by the MMU in its Annual State of the Market Report for SPP in 2021.

SPP IM Benefit to Kansas Ratepayers

In Staff's evaluation of Empire's participation in the SPP IM and the benefit it provided to Kansas customers in 2021, Staff relied on SPP's calculation of the regional marketplace benefit, and Empire's analysis of the SPP IM benefit in its simulation model. Staff requested SPP provide an update of its regional SPP IM benefit calculation for the current year and from the inception of the SPP IM in 2014. Based on SPP's analysis of 2021 inclusive of the Winter Weather Event, the SPP IM provided a net regional benefit of $1.42 billion from its energy and regulation markets in 2021, and roughly $5.65 billion in regional benefits since its inception. This information suggests Empire's participation in the SPP IM has produced some benefits to Kansas ratepayers in 2021.

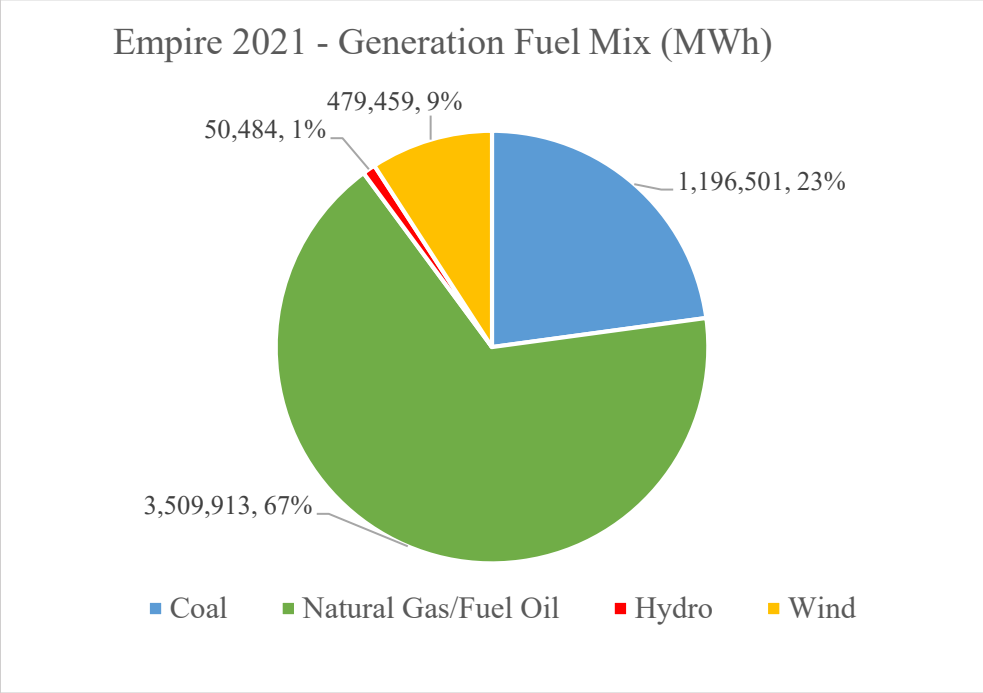
Staff issued formal discovery requesting Empire provide an analysis examining the estimated benefit/savings produced by the SPP IM Consolidated Balancing Authority versus the costs to serve retail customers with the Company's generating units and reasonable access to wholesale markets. In response, Empire provided a simulation model. The model estimates the net cost of fuel and purchase power to supply Empire's native load using its generation resources and then, compares the simulation results to its operating results under the SPP IM. Unit availability, cost of fuel, renewables output, and actual load are inputs to the model, and the results were analyzed and adjusted to include cost that would be present in both scenarios. The results showed that by participating in the IM, Empire reduced costs by an estimated ** [redacted] ** in 2021.[22]

[21] Empire and Staff provided analysis of Empire's natural gas costs incurred during Winter Storm Uri from February 9 – February 21 in the General Investigation Docket No. 21-EPDE-330-GIE.

[22] *See* Empire's confidential response to KCC Data Request No. 20. Empire's estimation of cost savings from the SPP IM were modeled using an energy marketing modeling software. Empire's analysis focused on benefits resulting from the consolidation of SPP into a single balancing authority, which is only a small part of the SPP IM. The estimated cost savings calculation is not meant to be a comprehensive analysis of Empire's benefits from participation in the SPP IM.

Staff has not performed a comprehensive review of the benefits and costs derived from Empire's participation in the various components of the SPP IM. Staff's analysis focused on short-run marginal costs of generating and transmitting power to serve Empire's load. In this review, Staff had observed a decline in Empire's all-in costs to serve its load since the implementation of the SPP IM. As indicated in Staff's cost review of Empire's 2021 ACA, natural gas prices have a significant impact on the wholesale energy prices, and a utilities exposure to natural gas as a generation source will dictate the costs that are passed on to ratepayers through Empire's ACA.

In response to KCC Data Request No. 27, Empire provided its generation production for 2021, which Staff compiled into the following pie chart that depicts Empire's fuel mix based on its generation output in 2021.



As detailed in the graph of Empire's generation portfolio, the majority of Empire's generation production was produced by natural gas and fuel oil as a source of fuel, with its generation supply consisting of: 67.03% natural gas and fuel oil, 22.85% coal, 9.16% wind generation, and nearly 1% from hydro generation in 2021. With a more heavily balanced generation portfolio of natural gas, Empire's exposure to natural gas price volatility resulted in a higher impact to its fuel purchases of natural gas and its wholesale power purchases needed to serve load. While the higher natural gas exposure resulted in a more significant ACA impact in 2021, Empire's customers benefited from the low natural gas prices and wholesale energy prices, resulting from a more flexible generation fleet that responds quicker to changes in SPP's market signals. As a result of its more flexible natural gas fleet and low cost wind generation, Empire reduced its total all-in ECA fuel costs from $0.0294/kWh in 2013 to $0.0222/kWh in 2020, or a 24.34% reduction in its all-in ECA fuel costs per kWh during this period.

While Empire's ECA increased significantly in 2021, the primary driver of the ECA increase was related to Empire's exposure to natural gas as a fuel source for energy production during Winter

Storm Uri in February and its lingering market impact on natural gas prices throughout the remainder of the year. During Winter Storm Uri, Empire's coal and wind generation provided a hedge against the high commodity prices of natural gas, resulting in a significant increase in the production margins of those units. This helps to offset some of the increase in fuel costs and purchase power expenses that Empire incurred to serve Kansas customers, which will be explored further in the next section of Staff's analysis of Empire's coal units.

Based on Staff's review of the available market data from SPP's calculation of the regional SPP IM benefit and Empire simulated model comparing SPP's operation as a single balancing authority against the modeled impact of serving customers with its own generation, the market data suggests that the SPP IM is benefiting Empire's Kansas customers. In addition, Empire has demonstrated an overall decline in its all-in ECA costs per kWh by 24.34% from 2013 through 2020. Staff discussed the SPP market dynamics of natural gas and purchase power that resulted in significant impacts to Empire's 2021 ECA filing. Based on Empire's model of the SPP benefit that occurred in 2021, and the overall decline in Empire's all-in ACA costs that occurred between 2013 and 2020, the analysis suggests that the SPP IM is benefiting Empire's Kansas customers.

Performance Review of Empire's Coal Units

In the 21-198 Docket, Staff performed a comprehensive review of Empire's operational strategies for managing the self-commitment of its coal units and evaluated the market performance of the units. Staff incorporated a performance review of Empire's coal units in its yearly audit of SPP market activity. As part of the discovery process, Staff issued a performance template requesting monthly market data for Empire's coal units in 2021. In this Report, Staff evaluates the market performance of Empire's unit by analyzing the short-run production margins generated by Empire DA energy and operating reserve market activity. Next, Staff analyzes the DA energy margins of Empire coal units during the unit's self-commitment in the SPP IM. The calculation relies on the DA energy revenue compared against the short-run production margins recoverable under SPP's mitigated offer guidelines. Mitigated offers are intended to capture incremental production costs, including the appropriate application of opportunity costs, for the unit providing services in the SPP energy or operating reserve markets.[23] Market participants are required to submit a mitigated offer curve in accordance with the market protocols.[24] The MMU evaluates mitigated offers to determine if the production costs qualify for recovery. Finally, Staff will analyze trends in market activity including the DA energy margins, the volume of self-committed energy, and the number of hours the units were self-committed from 2020 – 2021.

Empire's Coal Generation Facilities

For reference, Staff provided a table of Empire's coal generation facilities, its ownership interest in each facility, and the nameplate capacity of the facility provided in the FERC Form 1 Report. Due to the comparative analysis Staff provides on the 2020 data, Staff would note Empire retired its Asbury Generating Station in March of 2020; however, the Asbury unit did not clear the unit commitment process for economic dispatch during January and February of 2020. Therefore, Staff did not include Asbury coal unit in its review. In addition, Empire is a minority owner of its Iatan and Plum Point generating units. As such, Empire does not have direct operational control over

[23] SPP's mitigated offer guidelines can be found in Appendix G of the Integrated Marketplace Protocols.

[24] A market participant's offer may be mitigated when the market participant is found to have market power or when the offer exceeds SPP's conduct threshold and impact screening.

the unit commitment decisions of these coal units. Iatan is bid into the market as a Combined Interest Resource by Evergy Metro, and Empire receives a proportional share of its revenue and costs based on its ownership percentage.

EMPIRE COAL GENERATION FACILITIES: Ownership Interest & Name-Plate Capacity				
Generation Facility	**Ownership**	**Ownership Percentage**	**2020**	**2021**
Iatan	Co-owned	12%	210.47	210.47
Plum Point	Co-owned	7.52%	50.00	50.00
Plum Point	PPA	7.52%	50.00	50.00
				Data: FERC Form 1

Performance Review and Self-Commitment Analysis of Empire's Coal Units

Empire's market activity contains data for competitive services provided in a wholesale energy market; therefore, Empire's SPP IM data and the Staff's comparative analysis of market performance to the prior year ACA period will be considered confidential. Staff aggregated Empire's available monthly market performance data for the 2021 ACA period from Empire's confidential response to KCC Data Request No. 30. For prior year comparison data, Staff aggregated the monthly market activity from Empire's response to Staff discovery in the 21-198 Docket. Empire's monthly market data is contained in Schedules No. 1 through Schedule No. 4, which is included in Confidential Appendix A of this Report.

For each schedule, Staff provides a comparative analysis of year-over-year trends in the self-commitment of Empire's coal units. Staff's analysis includes: the short-run production margins Empire generated for each coal unit, the energy margins Empire generated while the unit was self-committed, the volume of self-committed energy, and the number of hours each unit was self-committed in the SPP IM during the ACA period.

Staff would note that Empire's SPP IM activity in 2020 & 2021 was impacted by the implementation of a tariff-related Revision Request No. 266 (RR 266) for Combined Interest Resource (CIR) that went live on August 1, 2020. Prior to August 1, 2020, Empire would bid its share of Iatan 1 and Iatan 2 on a daily basis for its 12% ownership share. Following the implementation of RR 266, Evergy and Empire elected to register the joint-owned resource as a CIR, allowing the market clearing engine to clear each Iatan unit as a single resource, and then, post market revenue allocations to be dispersed to each share in settlements based on its designated ownership percentages. The revenue allocations would be posted through new billing determinants and the addition of two new charge types[25] to effectuate the allocation of settlement dollars for the units registered as CIRs based on the designated ownership percentages for the unit. As a result of the change in SPP IM data reporting, Staff was not able to obtain a breakdown of Empire's self-commitment data for Iatan 1 and Iatan 2, following the implementation of CIR

[25] SPP's new charge types include: Day-Ahead CIR Adjustment Amount (DACirAdjDlyAmt) and Real-time CIR Adjustment Amount (RtCirAdjDlyAmt).

reporting in August 1, 2020. Staff's breakdown of Iatan 1 and Iatan 2's self-commitment data is contained in Staff's Report for Evergy Metro's 2021 ACA.

** [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[26] The Schedule No. 1 table reproduces the monthly DA production margin found in Confidential Appendix A, Schedule No. 1.

[27] For Iatan 1 & Iatan 2, the Production cost data was taken from Empire's response to KCC Data Request No. 22, which provided a monthly breakdown of its Summary of Fuel and Purchase Power Reports. The Plum Point was taken from Empire's response to KCC Data Request No. 30. Plum Point's production margin data contains a portion of the PPA between Empire and MJMEUC's share.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[28] *See* Empire's confidential response to KCC Data Request No. 30.

[redacted]

[29] *See* Appendix A: Schedule No. 2 for the monthly calculation of DA energy margins by coal unit.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[30] *See* Appendix A, Schedule No. 3 for Staff's monthly calculation of Empire's volume of self-committed MWhs for each coal unit.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[31] *See Id.,* Schedule No. 4 for Staff's monthly calculation of the number of operating hours Empire's coal units were self-committed in the SPP IM.

[redacted] **

Findings of the Market Performance Analysis

Staff's methodology of aggregating monthly self-commitment data and looking at the market performance of Empire's coal units is consistent with the approach utilities use to manage their coal operations in the SPP IM. In its 2018 ACA Report, Staff detailed the limitations of SPP's current unit commitment optimization in evaluating resources with long lead times and high start-up costs. Due to these limitations, electric utilities rely on their own forecasting methodologies and the forecasts published by SPP to determine if the projected revenue of a coal unit is likely to support the unit operations over the anticipated market window. If projected revenues exceed the unit's short-run marginal cost, a contribution margin is produced, which contributes to the fixed operating and maintenance cost recovery of the unit. As such, the operation of the unit is economically beneficial to ratepayers even though the net sales revenue may not cover the full operating costs of running the unit. For this reason, the fixed operating and maintenance costs are considered "sunk costs" in the near-term. As stated in last year's ACA report, Staff believes a contribution margin analysis is an appropriate measure for evaluating the market performance of coal units in ACA proceedings. At its basic level, a contribution margin analysis provides a threshold determination of whether Empire's market strategies for the self-commitment of its coal units are providing value to ratepayers.

In aggregate, Empire's market strategies for managing its coal units have produced monthly contribution margins at its units that help support the fixed cost recovery of the assets. During self-committed operation, Empire's coal units produced day-ahead energy revenues in excess of the unit's production costs throughout the operating months in which data was available. Based on its performance audit, Empire's market strategies appear to be successful in generating a contribution margin when the units are self-committed; and therefore, Staff is not recommending any disallowances in Empire's 2021 ACA.

The year-over-year cost increase in Empire's ACA was primarily driven by the high natural gas prices setting the marginal price of energy in the SPP IM. As demonstrated by Empire's fuel mix, gas generating assets accounted for 67% of Empire's generated production. While Empire's coal and wind assets provided a hedge against the cost increase, Empire's increased fuel costs and wholesale energy purchases were needed to fulfill consumer demand for energy. The data presented in this Report helps to illustrate the extraordinary cost impacts of Winter Storm Uri in the energy and gas markets. In addition, the significant supply cut from natural gas production wells, gathering systems, and processing plants throughout the SPP region, resulted in the demand for natural gas for energy production outstripping the available supply of natural gas during Winter Storm Uri. As such, utilities withdrew available gas from storage when natural gas pipeline transportation capacity was sufficient to be drawn upon. Due to the natural gas market conditions, the price of natural gas was historically higher for the remaining period of 2021, as utilities replenished their storage reserves in preparation for the winter season of 2022. Staff findings are

consistent with the Testimony filed in the General Investigation of Empire's operations and cost recovery plan for Winter Storm Uri in Docket No. 21-EPDE-330-GIE.

RECOMMENDATION:

Staff recommends that the Commission approve Empire's ACA factor of $0.00362 per kWh. Staff will continue to monitor Empire's performance and participation in the IM and will provide period updates to the Commission regarding this issue as often as desired.

CERTIFICATE OF SERVICE

22-EPDE-261-ACA

I, the undersigned, certify that a true and correct copy of the above and foregoing Notice of Filing was served via electronic service this 9th day of October, 2023, to the following:

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