BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE APPLICATION OF	)	
OKLAHOMA GAS AND ELECTRIC COMPANY	)	
FOR AN ORDER OF THE COMMISSION	)	
AUTHORIZING APPLICANT TO MODIFY ITS	)	CASE NO. PUD 2023-000087
RATES, CHARGES, AND TARIFFS FOR RETAIL	)	
ELECTRIC SERVICE IN OKLAHOMA	)	

Rebuttal Testimony

of

Brian C. Huckabay

On behalf of

Oklahoma Gas and Electric Company

May 17, 2024

Q. **Please state your name and business address.**

A. My name is Brian Huckabay. My business address is 321 North Harvey, Oklahoma City, Oklahoma 73102.

Q. **Are you the same Brian Huckabay that filed Direct Testimony on December 29, 2023?**

A. Yes.

Q. **What is the purpose of your Rebuttal Testimony?**

A. The purpose of my Rebuttal Testimony is to address claims made by Public Utility Division ("PUD or "Staff"") witnesses Stephens. Additionally, I will provide further details about projects that they have recommended for disallowance and demonstrate how these projects provide safe and reliable service to OG&E's customers. Finally, I will discuss Mr. Stephens failure to account for significant risks to OG&E's system, including wildfire, and explain the Company's evaluation and mitigation strategy for this significant risk.

<u>EXECUTIVE SUMMARY</u>

Q. **Please provide a summary of your testimony.**

A. OG&E's 2,300 members work every day to ensure our customers have safe, reliable, and affordable power every hour of every day of the year. Over the past five years, OG&E's significant investments in its transmission and distribution system were all made to meet that goal. OG&E has upgraded and installed new equipment on overhead and underground power lines as part of our Grid Resilience and Weather Hardening investments to reduce service interruptions caused by severe weather, wildlife, and equipment failures. Since April 2022, OG&E replaced over 3,000 distribution line poles and increased the strength of more than 24,000 poles by installing cost-effective steel trusses and undergrounded 42 highway crossings as part of our Grid Enhancement investments.

As explained in my Direct Testimony, OG&E's customers are already seeing significant improvements on upgraded circuits. Circuits with Grid Enhancement Investments completed show an improving circuit System Average Interruption Duration Index ("SAIDI") trend of almost four minutes a year, where circuits without Grid

Enhancement investments completed have a degrading circuit SAIDI on average of over twelve minutes per year.

In this proceeding, the Commission's PUD retained the services of outside consultants Paul Alvarez and Dennis Stephens to evaluate OG&E's transmission and distribution investments. The perspective presented by these witnesses is entirely different from the perspective offered by PUD's expert in the 2021 rate case concerning these same types of investments. Based on the analyses and recommendations presented in their Responsive Testimony, Mr. Stephens and Mr. Alvarez appear to have severely misunderstood the need for these investments and the benefits they are providing to OG&E's customers. Specifically, Mr. Stephens makes multiple erroneous assumptions and assertions in his testimony, including:

- Recommending the disallowance of seven projects already deemed prudent by the Commission in Case No. PUD 202100164.
- Misclassifying two projects as proactive Asset Improvement projects instead of Failed-in-Service projects, despite evidence provided in discovery.
- Presenting a "supporting" analysis that appears to show OG&E's Circuit Breakers and Transformers have a useful life of 200 to 1,000 years.
- Claiming there is "no obvious trend" in equipment failure improvement as a result of OG&E's investments when a basic review of his own data shows an obvious trend.
- Implying equipment testing criteria is a simple pass/fail exam rather than a multi-step process requiring judgment by professional engineers.

These are only a few of the highly concerning claims by witnesses Stephens and Alvarez that I will address. OG&E witnesses Kandace Smith and Robert Shaffer also provide Rebuttal Testimony addressing other claims made by these consultants. Overall, it appears that Mr. Stephens and Mr. Alvarez claim OG&E is spending too much, too quickly on safety and reliability for its customers, but they provide little to no reasonable evidence to support their claims. It is also worth noting that no other party in this case has recommended a disallowance of invested capital in their Responsive Testimony. I will also address Mr. Stephens' and Mr. Alvarez's failure to recognize the emerging risk of wildfires in OG&E's service area and explain OG&E's plan to address this threat.

Of the projects contested by Mr. Stephens that <u>are actually at issue in this rate case</u>, my testimony will explain how each provides significant safety and reliability benefits for customers. The Company's transmission and distribution investment plan is clearly prudent and reasonable, and OG&E continues to have some of the lowest rates in the country.[1] I respectfully request the Commission reject the disallowance recommendations of PUD witnesses Dennis Stephens and Paul Alvarez and find OG&E's investments prudent and necessary for the safe and reliable provision of electric service.

STEPHENS FLAWED PRUDENCE PERSPECTIVE

Q. **Please describe the two categories of investment as outlined by Mr. Stephens.**

A. Mr. Stephens has two categories for determining prudence by his personal standard. The first category is for investments Mr. Stephens believes must be made in the near term (1-2 years from the end of a test year). He believes once a regulator is satisfied the investment was necessary for safe and reliable power, implemented at the lowest possible cost, a regulator can correctly determine that such investments were fair, just, and reasonable.[2]

The second category is for "investments that a for-profit utility prefers to make, but that are not strictly required for safe and reliable service in the near term," and in his opinion "prudence should be awarded only in instances in which the investment is likely to deliver benefits to customers in excess of customers' costs." In response to a discovery request, PUD said Mr. Alvarez and Mr. Stephens define prudent as "a characteristic of equipment or software that has been 1) procured in an ethical, low-cost manner; 2) deployed with due care; and 3) used and useful in the delivery of safe and reliable service."[3]

Q. **Does Mr. Stephens offer examples of what investments he believes a utility must make in the near-term?**

A. Mr. Stephens places the qualifier "near-term" as part of his investment type determination criteria but does not offer any detail in his testimony regarding the timeframe he would qualify as near-term. He goes on to state, "Examples of such spending include: 1) spending to repair or replace equipment that fails or is damaged (for example, by storms); 2) spending incurred to connect new customers; 3) spending to accommodate load growth

1 See Rebuttal Testimony of Kimber Shoop.
2 Responsive Testimony of Dennis Stephens, pg. 6.
3 PUD Response to Data Request OG&E-PUD 3-12.

(capacity), as supported by circuit- and substation- specific load growth forecasts relative to equipment capacity ratings; and 4) administrative spending (such as on customer billing software)."[4] In a subsequent discovery response, PUD indicated that Mr. Stephens' considers "near term" to mean "within one or two years of the end of a test year."[5]

Q. **Do you believe anything is missing from his list of investments a utility must make in the near-term?**

A. Yes. Mr. Stephens leaves off examples of investments he believes a utility must make to provide reliable service, and more disturbingly, he leaves off examples of investments he would consider a utility must make to ensure service is safe.

Q. **Has the scope of "near-term" investments changed in recent years?**

A. Yes. Since Mr. Stephens retired from a utility 13 years ago, the industry has experienced significant challenges related to the global supply chain. In just the last 4 years, the Company has experienced increased demand and rising costs for both overhead and underground construction resources. OG&E has experienced unprecedented material shortages that fundamentally changed the way we manage and run our business. The lead times and cost of materials have increased significantly and at an unprecedented rate. OG&E is now required to make decisions earlier than it previously has had to do so.

To offer perspective, in 2019 Substation Transformers and Circuit Breakers had typical lead times of 30 weeks and 20 weeks, respectively. As it stands today, lead times for Substation Transformers are over 150 weeks and Circuit Breakers are more than 100 weeks. With lead times five times longer than they were in 2019, OG&E cannot wait until after an asset fails before planning for its replacement in every situation, as Mr. Stephens' recommends. Consequently, Mr. Stephens' perspective is significantly outdated and does not account for the recent and rapid developments in the industry.

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4 Responsive Testimony of Dennis Stephens, pg. 6.
5 PUD Response to Data Request OG&E-PUD 3-10.

Q. **Is the opinion Mr. Stephens is offering on behalf of the PUD an entirely different perspective from what was offered by PUD in OG&E's 2021 general rate case?**

A. Yes. In OG&E's 2021 general rate case, the PUD filed the Responsive Testimony of Kathy Champion. Ms. Champion stated at the time, "…it is also intuitive and undeniable that the act of intentionally targeting and replacing aging equipment or using new technology to communicate within the system or to customers, provides real benefits to all customers through a reduction in unplanned outage events and in recovery time from those events."[6] It is unclear to me what has changed in OG&E's investment strategy that warrants this sudden and extreme change in position from the PUD.

Q. **What investments has Mr. Stephens recommended the Commission disallow in this case?**

A. In addition to the disallowances supported by PUD witness Alvarez, Mr. Stephens recommends 18 transmission line and substation projects totaling $24,285,000 be disallowed. Those 18 projects are listed in Table 1 and 2 below. There are six "discretionary" transmission projects listed in his Table 1 (totaling approximately $16.5 million) and there are 12 "asset improvement" transmission projects listed in his Table 2 (totaling approximately $7.8 million).

Table 1: Stephens's "Discretionary" Transmission Projects

Project Description	AFE*	$ (000's)^	Project Description	AFE*	$ (000's)^
TLN-69kV Beeline	8174	$ 5,240.3	TSB-Glendale Upgrade	7831	1,322.1
TLN-Nation-Jamesville	8173	5,487.9	TSB-Type A – Cleo	8796	1,137.1
TLN-May Ave to 38th St.	7996	1,056.0	TSB-Type A – Reno	7458	2,258.4
			TOTAL		**$16,501.8**

6 Case No. PUD 2021-000164, Responsive Testimony of Kathy Champion, pg. 9.

Table 2: Stephens's "Asset Improvement" Transmission Projects

Project Description	AFE*	$ (000's)^	Project Description	AFE*	$ (000's)^
TSB-Park Place	4954	$ 149.3	TSB Type A – 38th St.	7473	15.3
TSB-Blubell Sub RTU	5671	8.1	TSB-Maysville Sub	7876	4.7
TSB-Type A North OK	7042	42.9	TSB-RP SW 5th	7369	659.9
TSB Auto-Meridian Sub	7092	3.9	TSB-Rush Creek Sub	7878	284.1
TSB Resiliency Hancock	7087	38.1	TSB-McClain	8590	1.933.0
TSB-Type A Forrest Hills	7471	66.8	TSB-Arcadia Trans Bk	8575	4,577.8
			TOTAL		**$7,783.9**

* "Authorization for Expenditure" (Attachments provided in response to PUD 15-11 (d)(i))

^ Dollar amounts from Attachment PUD 15-11(d)(i)_Att1.

CONTESTED PROJECTS ALREADY DETERMINED PRUDENT

Q. **Were any of the projects that Mr. Stephen's recommends for disallowance already determined prudent by the Commission in a previous proceeding?**

A. Yes. Seven of the 12 projects in Table 2 were determined to be prudent by the Commission in OG&E's last rate case.[7] All projects listed below – and identified on Rebuttal Exhibit BH-1 – have an in-service date prior to April 1, 2022, and therefore were included in OG&E's last general rate case:

- TSB-Park Place
- TSB-Type A North OK
- TSB-Auto-Meridian Sub
- TSB-Resiliency Hancock
- TSB-Type A Forest Hills
- TSB-Type A – 38th St.
- TSB-Maysville Sub

Q. **Should Mr. Stephens have known these projects were determined prudent in PUD 2021-000164?**

A. Yes. Mr. Stephens cites an attachment provided by the Company in discovery response PUD 15-11(d)(i) that contained the in-service dates of these projects. Additionally, Mr. Stephens and Alvarez were both witnesses in that case, testifying on behalf of the Attorney General.

[7] Case No. PUD 2021-000164.

Q. **Are there any remaining costs related to these projects included in this rate case?**

A. Yes. The projects were placed in service and have been considered used and useful. However, there are often costs associated with a project that lag an asset being placed in service. Some examples of costs that can lag a project being placed in service are removals/demolition costs and right of way restoration costs. These costs are booked to the same project for operational and book accounting purposes. Nonetheless, the projects were already in-service prior to the review period in this rate case and were considered prudent by this Commission.

Q. **What does Mr. Stephens' misclassification and recommendation to disallow projects already approved by the Commission tell you about Mr. Stephens' disallowances?**

A. In my opinion, this demonstrates that Mr. Stephens' review of the AFE failed to capture key information to ensure his disallowances are appropriate. Recommending disallowance of utility investment and characterizing it as imprudent is a serious matter, and it should not be taken lightly. To miss such basic details about these projects shows that Mr. Stephens clearly failed to conduct a thorough review of the underlying evidence. Therefore, the Commission should reject the disallowances put forward by PUD's consultants.

<u>CONTESTED PROJECTS INACCURATELY CLASSIFIED BY STEPHENS</u>

TSB-ARCADIA TRANS BK

Q. **Why did OG&E execute the TSB-ARCADIA TRANS BK project?**

A. OG&E executed the TSB-ARCADIA TRANS BK project to replace a 345kv to 138kv bus tie transformer that failed in service at the Arcadia substation.

Q. **Did Mr. Stephens misclassify the purpose of this project?**

A. Yes. Mr. Stephens classified the project titled TSB-ARCADIA TRANS BK as an Asset Improvement project when it was actually a Failed-in-Service Project. As a result, he misapplied his own standard for prudence by categorizing this project as "discretionary" when in-fact the asset failed while in-service. The TSB-Arcadia Trans BK project would be categorized as required for safe and reliable service under Mr. Stephens' criteria for a prudent project. Mr. Stephens explained that certain projects like "1) spending to repair or replace equipment that fails" should be deemed prudent because, "a regulator need only ensure that the spending was necessary for safe and reliable service."[8] Nevertheless, Mr. Stephens does not adhere to his own definition of a prudent project and instead mislabels the project as discretionary.

Q. **Should Mr. Stephen's have known this project was to replace a failed-in-service transformer?**

A. Yes. In discovery, the AFE for the TSB-Arcadia Trans BK project was provided (Rebuttal Exhibit BH-2). In the Description and Purpose section the AFE states: "Replace Failed in Service 345-138kv 400MVA bus tie transformer bank #2 and associated equipment." Additionally, in discovery response PUD DR 02-03, a spreadsheet containing the categorization of projects I prepared for my direct testimony was provided (see Rebuttal Exhibit BH-3). Within that spreadsheet, the Arcadia Transformer project was categorized as "Failed in Service."

Q. **Why did OG&E replace the failed Arcadia bus tie transformer?**

A. OG&E determined that animal contact occurred resulting in operation of the transformer protection relaying. After operation, OG&E conducted standard diagnostic testing including Dissolved Gas Analysis (DGA), Ratio, Winding Resistance, and Sweep Frequency Analysis (SFRA). The testing indicated a substantial shift of the A-phase winding. Consultation with Doble confirmed the analysis of the OG&E subject matter experts that the winding failed due to the extremely large through fault currents seen with the fault.

Q. **Was the project TSB-Arcadia Trans BK necessary for safe and reliable service?**

A. Yes. Replacement of a failed-in-service bus tie transformer is critical for the safe and reliable operation of the OG&E Transmission system.

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8 Responsive Testimony of Dennis Stephens, pg. 6.

REMAINING TRANSMISSION PROJECTS CONTESTED BY STEPHENS

TSB-BLUEBELL-SUB-RTU

Q. **What is the purpose of the project TSB-BLUEBELL-SUB-RTU AFE 5671?**

A. The purpose of the TSB-BLUEBELL-SUB-RTU was to replace a specific make and model of Remote Terminal Unit (RTU) that had become obsolete.

Q. **What is the function of an RTU and why is it important that an RTU have a high availability?**

A. RTUs are used in substations to allow communications and control from equipment and relays to the centralized control center. Having communication and control of the equipment in a substation is a common industry practice and important to ensure safe and reliable electric service for customers. Communications and control provide the operator of the system the ability to detect issues on the system and respond quickly. It also enables more advanced grid functionality, such as voltage reduction regulation and automatic sectionalizing.

Q. **How did OG&E determine the make and model of RTU was obsolete?**

A. OG&E determined the RTUs in question to be obsolete when parts were no longer available to make repairs. Additionally, the software required to communicate and configure the RTU operated on Windows 98 operating system and was operating under an exception to OG&E's Corporate Cyber Security Policy that requires equipment of this nature to have vendor support for patching and firmware updates.

Q. **Why is replacing non-supported operating systems required?**

A. Replacing operating systems is required when they are no longer supported by the developers and are not receiving security patches to address cyber security vulnerabilities they may have. If vulnerabilities go unaddressed, it could provide a pathway for a bad actor to infiltrate OG&E assets.

Q. **Was the replacement of the obsolete RTU at BLUEBELL required for safe and reliable operation?**

A. Yes. Had OG&E waited for the RTU to fail, it would have led to an extended period without communication or control to the substation. Based upon the time required to engineer the replacement of the RTU and install the replacement, it is reasonable to expect that OG&E would have been without communication to the substation for several months. I believe a reasonable utility manager given the same facts around this situation, would have made the same decision that OG&E made to proactively replace the obsolete RTU prior to a failure that would led to no communication or control of the substation.

Q. **Do you agree with Mr. Stephens' categorization of this project as discretionary?**

A. No. This project was necessary to provide safe and reliable service, and I believe our customers would expect us to be able to remotely control the substation that provides power to their homes and businesses.

TSB-RP SW 5th

Q. **What is the purpose of the project TSB-RP SW 5th?**

A. The purpose of the TSB-RP SW 5th was to proactively replace 12 138kv air switches that were installed in 1958 after two other switches of the same make, model and age failed when operated. Upon inspection of the substation, it was also determined that 26 insulators were damaged and required replacement.

Q. **Why did OG&E need to replace the air switches?**

A. The TSB-RP SW 5th project was initiated due to safety concerns for OG&E members who are required to be in the vicinity when operating the air switches. In other near misses, failed switches and associated insulators led to falling switch parts and/or insulator pieces. A "struck-by" incident can result in serious injury to OG&E members and contractors working on substation equipment.

Q. **Was the replacement of the 12 air switches required for safe and reliable operation?**

A. Yes, replacement of the 12 air switches and 26 insulators was necessary for the safe and reliable operation of the SW 5th substation as the switches have well outlived their intended useful life and presented a safety hazard for OG&E members. Additionally, the insulators were inspected and found damaged. I believe a reasonable utility manager given the facts around this situation would have made the same decision as OG&E.

Q. **Mr. Stephens has categorized this project as discretionary. Do you agree?**

A. No. This project is a great example of how Mr. Stephens' definitions for reasonable and prudent utility investments fail to consider key aspects of safe and reliable service.

TSB – MCCLAIN

Q. **What is the purpose of the project TSB-MCCLAIN?**

A. The major scope of the TSB-MCCLAIN was to:

1. Replace four power circuit breakers (PCBs),
2. Install a redundant Station Service Voltage Transformer ("SSVT"), and
3. To replace the control house battery cabinet and batteries.

Q. **Why did OG&E replace the four power circuit breakers?**

A. OG&E experienced several issues associated with the premature failures of operating mechanisms from a specific make and model of ABB Circuit Breaker. During engineering of the replacement Circuit Breakers, OG&E determined that the power circuit breakers also required replacement as the existing breakers did not have the appropriate fault interrupting rating. This fault rating inadequacy was due to an increase in the system fault current.

Q. **Why were the circuit breaker replacements required for safe and reliable service?**

A. The fault interrupting rating of a circuit breaker is the maximum fault current that the breaker can safely interrupt without damage or failing to operate as intended. If this rating is exceeded during a fault, the breaker may fail to open, fail to quench the arc, cause mechanical and/or electrical damage to the breaker, and could serve as a safety hazard as high energy faults can lead to fires or explosions. It could also lead to injury due to flying debris should an OG&E member happen to be present when the fault occurs.

Q. **Why did OG&E replace the control house battery cabinet and battery bank?**

A. The control house battery cabinet and battery bank were replaced due to the cabinet being rusted and the paint failing, and the batteries showing corrosion on the posts indicating failure is likely eminent.

Q. **Why was the replacement of the control house battery cabinet and battery bank required for safe and reliable service?**

A. The North American Electric Reliability Corporation (NERC) requirements mandate that backup batteries are maintained to ensure the reliability of the electrical grid. Backup batteries play a vital role in emergency and fault conditions, ensuring that protection systems continue to operate effectively even during power failures.

Q. **Why was a redundant SSVT (Service Station Voltage Transformer) installed?**

A. A redundant SSVT was installed to ensure that critical substation services continue to have a power supply without interruption. McClain substation interconnects the natural gas-fired McClain Power Plant to the transmission system. This redundancy is a best practice in the industry and typical for substations to ensure a higher level of generation capacity reliability for OG&E's customers. Depending on the time of the year and market conditions, an unplanned outage at McClain Power Plant could be extremely costly and dangerous for customers.

Q. **Mr. Stephens has categorized this project as discretionary. Do you agree?**

A. No. This project was necessary to provide safe and reliable service. Failure to install breakers with sufficient fault interrupting capability, address degrading battery bank infrastructure, or ensure redundant power to critical operations presents risk to reliability, safety, and energy costs sufficient to warrant replacement of these assets contained in the scope. I believe a reasonable utility manager given the facts around this situation would have made the same decision as OG&E.

TLN-69kV Beeline & TLN – Nation-Jamesville

Q. What is the purpose of the TLN-69kV Beeline & TLN – Nation-Jamesville projects?

A. The purpose of the TLN-69kV Beeline project is to rebuild 6.05 miles of the existing 69kV transmission line from Beeline to Nation substations. The Beeline to Nation transmission line segment will be rebuilt to 138kv standards to support future conversion to operate at 138kv.

The purpose of the TLN-Nation-Jamesville project is to reconductor 17.91 miles of existing transmission line from Nation to Jamesville substations. These are 2 of 3 projects to rebuild/reconductor the transmission line infrastructure from Muskogee to Sapulpa.

Q. What will be the total cost to complete the Muskogee to Sapulpa area line rebuilds/reconductor projects?

A. The cost to complete the Muskogee to Sapulpa area line rebuilds/reconductor projects is estimated to cost $47.8 million total when complete. At this time only these two projects in question have been completed and placed in service.

Q. Why is OG&E making these investments?

A. 69kV lines are the oldest on our system with an average energized date of 1962. 69kV lines represent 32% of our power delivery network (excluding EHV). The 69kV system serves approximately 25% of our customers. The reliability of the 69kV system is approximately half of the reliability of 138/161kV systems. OG&E is addressing the 69kV transmission system reliability issues with an eye for the future transmission needs to serve the increasing demand for electricity and improve reliability for our customers.

Q. What reliability benefits will customers see from these investments?

A. OG&E estimates that upon completion of the Muskogee to Sapulpa conversion, customers will experience a 70% reduction in momentary outages and a reduction in outage costs associated with a momentary outage equal to a present value of approximately $138 million over a 40-year period.[9]

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[9] Huckabay Rebuttal Workpaper – Muskogee to Sapulpa 69kv Conversion.xlsx

Q. **Are there other benefits that customers could realize in the future from this project?**

A. Yes. Upon conversion to 138kV, there will be a reduction in line losses for both energy and capacity. OG&E estimates a $8.0 million benefit over a 40-year period of operation due to a reduction in line losses.[10] This project will also support economic growth in the area through increased line capacity.

Q. **How did OG&E estimate the benefits associated with the reduction in outage costs?**

A. OG&E estimated the avoided momentary outage cost by calculating the difference between the existing momentary cost per year and the expected momentary cost per year after conversion. To determine the expected cost of conversion, OG&E utilized the historical performance of our modern construction 138kv lines. Costs for momentary outages are based on the results of the Ernest Orlando Lawrence Berkely National Laboratory study LBNL-6941E: Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States.[11]

Q. **Is this project necessary to provide safe and reliable service?**

A. Yes. Replacing assets that are poorly performing, nearing, or have already exceeded their useful life is necessary to ensure safe and reliable service. This project has the additional benefit of offering improvement in reduction in momentary costs experienced by customers in excess of the cost of the project as well.

TLN-May Ave to 38th St.

Q. **What was the purpose of the TLN-May Ave to 38th St. project?**

A. The purpose of the TLN-May Ave to 38th St. project was to reconductor 1.4 Miles of line and replace remaining 69kV standard poles from the May Substation to NW 38th St Substation.

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10 Ibid.

11 Huckabay Rebuttal Workpaper – Muskogee-Sapulpa 69kv Conversion.xlsx

Q. **Why did OG&E need to reconductor and rebuild the line?**

A. The May Ave to 38th St. line was built in 1960 and is located along a major thoroughfare in a densely populated area of Oklahoma City. The line previously had sections of conductor spliced and poles replaced in a previous storm restoration event, resulting in variances in conductor size along the line. Replacing the remaining poles and reconductoring the line would eliminate a congestion point on the line due to differences in conductor size and allow for future conversion to operate at 138kV, should the need arise.

Q. **Was the TLN-May Ave to 38th St project necessary for safe and reliable operations?**

A. Yes. Replacing deteriorated wood poles due to decay is vital for reliability and public safety. A pole failure on this line could be extremely hazardous to the public due to its proximity to May Ave. OG&E also eliminated a congestion point for a relatively low cost, which allows for increased flexibility of operations in OG&E's main load center. Additionally, replacement of the aged wood poles with steel poles will prevent woodpecker damage from occurring in the future and increase resilience against future extreme weather when compared with older construction standards. I believe a reasonable utility manager given the facts around this situation would have made the same decision as OG&E. This project is a quintessential example of improving the safety and reliability of electric service.

TSB-Glendale Upgrade

Q. **What was the purpose of the TSB-Glendale Upgrade project?**

A. The purpose of the TSB-Glendale Upgrade project was to install three transmission line breakers and associated relay and communications equipment to address an undesirable configuration that overly exposed distribution customers to faults on the transmission system.

Q. **Why did OG&E need to install three line breakers at the Glendale substation?**

A. Prior to installation of the additional three line breakers, there was 60MVA of load tapped directly off the transmission system. Should a fault occur with this tap, all customers on the Glendale substation would be impacted. Second, the Glendale substation has three transmission lines connected to the transmission bus. This required one line switch to remain open at all times or create an undesirable and complicated protection coordination situation. Installation of the line breakers also allowed for closing the normally open point, improving redundancy in the area since it provides an additional path for power to flow.

Q. **Was the TSB-Glendale Upgrade project necessary for safe and reliable operations?**

A. Yes. Reducing the impact of outages is a core function of utility planning. Without this upgrade, the impact of potential outages to our customers would be much higher. The breakers installed at Glendale and an associated project eliminated transmission line exposure for 108MVA of distribution capacity. The remaining 170MVA of distribution capacity saw almost a 60% reduction in transmission line exposure.

TSB-Type A – Cleo

Q. **What was the purpose of the TSB-Type A-Cleo project?**

A. The purpose of the Cleo project was to address operational relay coordination and communication issues being experienced at the Cleo Corner substation. The Cleo Corner substation has a 138kV section and a 69kV section with each section having its own control house. The 69kV section was energized in 1950 and the circuit breakers were installed in 1964.

Q. **What did OG&E do to address the coordination and communication issues?**

A. OG&E determined the best course of action to address the communication and coordination issues was to upgrade the obsolete electromechanical relays and first-generation digital relays with today's current standards. Upgrading to today's protection standards requires replacement of the control houses due to inadequate space in the two existing control houses for the new relaying equipment. OG&E combined both sections into one new control house. Communications equipment at the substation was also upgraded to fiber. Building a new control house allowed for construction to be completed on a significant portion of the job while the existing equipment was in service, minimizing impact to customers and the Bulk Electrical system.

Q. **Was the TSB-Type A-Cleo project necessary for safe and reliable operations?**

A. Yes. It was necessary to address the coordination and communication issues to prevent unnecessary outages, equipment damage due to delays in isolating faults, safety risks due to delays in isolating faults, and ensure stability of the grid. I believe a reasonable utility manager given the facts around this situation would have made the same decision as OG&E.

TSB-Type A – Reno

Q. **What was the purpose of the TSB-Type A – Reno project?**

A. The purpose of the TSB-Type A – Reno project was to replace the obsolete electromechanical relays and first-generation digital relays associated with the line protection and breaker control that have been experiencing increasing failure rates and associated circuit breakers. For context, the average age of the circuit breakers replaced was over 51 years with the newest breaker being 48 years old.

Q. **How did OG&E determine the relays to be obsolete?**

A. The relays were determined to be obsolete due to the inability to procure repair parts. Additionally, the breakers were an antiquated design that only had a single current transformer that provided signals to both the primary and backup relays. This single point of failure configuration is not an acceptable practice for modern relay protection. Should the circuit transformer fail it would lead to an unnecessary outage for customers.

Q. **Was the TSB-Type A – Reno project necessary for safe and reliable operations?**

A. Yes. Replacing obsolete equipment is necessary for safe and reliable operation. The breaker relays in this project were operating far past their usable and maintainable life. Installing replacement breakers while the outdated equipment was still in-service allowed work to be executed in an efficient manner and reduced the impact of planned and unplanned outages to customers. In my experience, work that is executed in a planned manner is typically 30% to 50% cheaper than work executed in an emergency and tends to have less safety incidents. I believe a reasonable utility manager given the facts around this situation would have made the same decision as OG&E.

TSB-Rush Creek Sub

Q. What was the purpose of the TSB-Rush Creek Sub project?

A. The purpose of the Rush Creek Sub Project was to replace the Motor Operated Switch Controls. The MOS switch controls were required to be upgraded to current standards when an obsolete RTU was replaced. This presented an opportunity to implement auto sectionalizing on the transmission bus. Auto sectionalizing is an operation scheme used to isolate faulty sections of the grid and restore power to unaffected areas there by limiting impact of faults to only those customers truly impacted by a fault.

Q. How did OG&E determine auto-sectionalizing devices were necessary?

A. When the RTU was replaced, it was required for the MOS controls to be updated to the current standards. Otherwise, the switches would not operate. It would not be acceptable for OG&E to have inoperable substation equipment.

Q. Was the TSB-Rush Creek Sub project necessary for safe and reliable operations?

A. Yes, the replacement of the RTU required the MOS controls to be brought to today's standards so that switches could be operated as needed. Auto-sectionalizing is standard functionality when new substations are built today. The replacement of an obsolete RTU presented an opportunity for low incremental cost to provide an upgrade that minimizes the impact of faults to smaller number of customers when a fault occurs.

ASSET REPLACEMENT STANDARDS

Q. Do you agree with Mr. Stephens' assertions that OG&E is replacing equipment too early in its useful life?

A. No. The projects that Mr. Stephens has recommended for disallowance are justified due to obsolescence or to address reliability or operational issues. While age alone is not sufficient justification to replace an asset, it is an indication of where an asset is in its life. Based upon the age of equipment that OG&E is replacing, I am confident that OG&E is acting prudently in replacing assets that are reaching the end of their useful lives.

Q. **Does OG&E follow industry standards to determine the condition of its assets?**

A. Yes. Tests recommended by Institute of Electrical and Electronics Engineers (IEEE), Doble, equipment manufacturers, and other industry standards are used by OG&E to determine the health of substation equipment. Mr. Stephens even refers to these tests as "objective" and "highly accurate."[12] However, Mr. Stephens disregards the necessary step of the process: review of the resulting test data by a qualified subject matter expert. This step is required to interpret the results of the test data, the risks to the system, and to determine appropriate action.

Q. **Are these industry-standard tests a simple pass/fail criteria?**

A. No. Mr. Stephens implies any professional review of the test data is unnecessary because the test results are simple and objective. This is inaccurate, overly simplistic, and ignores the logistical and operational requirements of maintaining a large fleet of substation equipment that is necessary for the safe and reliable delivery of electricity.

As Mr. Stephens even states in his own testimony, the "objective and highly accurate" tests "can vary widely and be slowly trending towards DGA limits for many years." Most test criteria have a range of outcomes that requires interpretation by a subject matter expert with categories like "Normal," "Caution," and "Severe." A "Caution" range may be from 100-700ppm with the "Severe" range anything greater than 700ppm. If three annual Dissolved Gas Analysis ("DGA") tests indicate a 110 ppm test result with no change in the data trend, the risk may be low, and the equipment operated and maintained as normal. However, if the same 3 gas measurements have gone from 50ppm to 600ppm to 1000ppm, the trend indicates a sharp increase from one year to the next and further interpretation is required by the subject matter expert. This will result in additional testing and analysis to determine the cause of gassing, the risk to the equipment, and if a repair or replacement is necessary. None of this is captured in a simple formula or pass/fail criteria as used by Mr. Stephens.

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12 Responsive Testimony of Dennis Stephens, pg. 18.

Q. **Does Mr. Stephens' overly simplistic pass/fail approach potentially create a conflict for OG&E members?**

A. Yes. Many of the qualified subject matter experts involved in the design, maintenance, and operation of OG&E assets are licensed Professional Engineers (PE) in the State of Oklahoma. As part of their licensure, they are bound by a set of rules of professional conduct. Title 245:15-9-1(a) offers the Purpose; scope; applicability statement:

> *To safeguard life, health, safety, and property, to promote the public welfare, and to establish and to maintain integrity and high standards of skill and practice in the engineering and surveying professions, the Rules of Professional Conduct in this subchapter shall be binding upon every licensee and on all firms authorized to offer or perform engineering or land surveying services in Oklahoma.*

Additionally, Title 245:15-9-3a details a Licensed Professional Engineers Responsibility to the Public.

> *(a) Licensees shall at all times recognize their primary responsibility is to safeguard the health, property, safety, and public welfare when performing services for clients and employers.*

I am concerned about the ramifications for our Professional Engineers should OG&E not be allowed to make decisions to replace equipment Professional Engineers have deemed unsafe.

Q. **If OG&E's equipment does not meet acceptable standards, can the Company delay replacement of the equipment?**

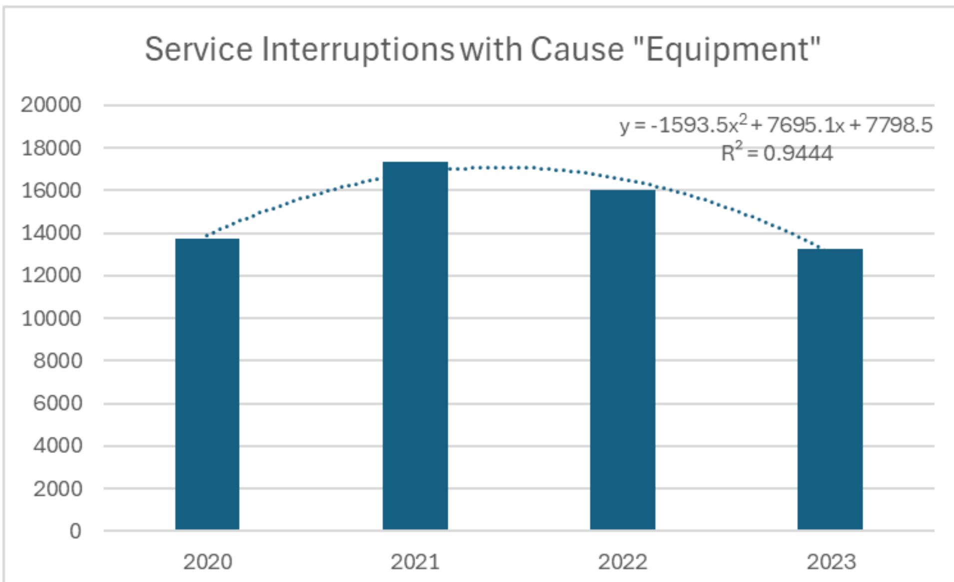
A. No. As customary with industry practice, preventative maintenance is performed on a scheduled time interval, meaning the next test may not be scheduled for months or years, and lead times and prices of this equipment may have increased dramatically. Breaker lead times have increased from 20 weeks to more than 100 weeks. Transformer lead times have also increased from 30 weeks to 150 weeks. Mr. Stephen's assumption that OG&E can place failed equipment back in service for years is not practical and not in the best interest of OG&E's customers.

EQUIPMENT FAILURE TRENDS AND SPENDING

Q. Do you agree with Mr. Stephens analysis that there is "no obvious trend"[13] in the service interruptions associated with equipment?

A. No. Mr. Stephens' own data shows that OG&E's investments are having a positive impact. I am not sure how Mr. Stephens can objectively look at the analysis presented in his Responsive Testimony[14] and claim there is no trend. As one can see in Figure 1 below, by simply adding a second order polynomial trendline to the graph of Mr. Stephens, one can see there is a trend and a trend that fits the presented data very well. With a coefficient of determination (R^2) equal to 0.9444, the equation explains 94.44% of the variation observed in the dependent variable.

Figure 1: Stephens Responsive Figure 3 with Trend Analysis



As presented, it appears that Service Interruptions related to equipment rose from 2020 to 2021. It peaks in 2021 and then decreases year over year for 2022 and 2023. From the peak in 2021, Service Interruptions associated with Equipment have reduced by ~24%. This reduction in Service Interruptions from 2021 to 2023 corresponds with the timing of T&D investments being made and placed in service over the period. This obvious trend begins to show the improvements to reliability that OG&E investments are making.

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[13] Responsive Testimony of Dennis Stephens, pg. 21.

[14] Responsive Testimony of Dennis Stephens, pg. 22, Figure3.

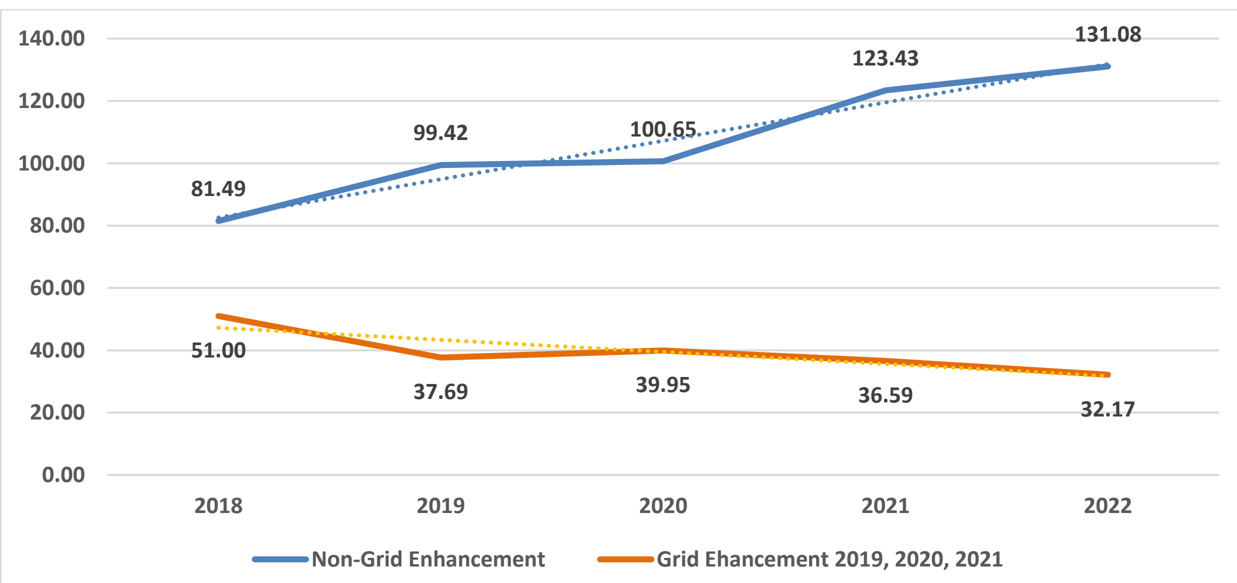
Q. **Does Mr. Stephens make unreasonable claims regarding the life of OG&E's transmission and distribution assets?**

A. Yes. Mr. Stephens presents a seriously flawed analysis for transformers and breakers and utilizes a calculated failure rate based on the trend from the last five years. Astoundingly, Mr. Stephens claims his analysis shows an "Annual Failure Incidence" of 0.005 for Power Transformers and 0.001 for Circuit Breakers.[15] These rates imply a 200 year life for Power Transformers and 1,000 year life for Circuit Breakers. These results are obviously egregiously incorrect to an engineer's review. Again, Mr. Stephens claims do not withstand the test of even basic scrutiny and call into question his entire testimony.

Q. **Mr. Stephens claims OG&E's increase in Asset Improvement spending is related to a discretionary decision that OG&E made to replace equipment more frequently than it has in the past. Is that an accurate statement?**

A. No. OG&E has not made an arbitrary policy decision to replace equipment more frequently than it has in the past. Rather, OG&E has experienced an increase in our Failed In-Service spending because of increasing asset failures. This increase is supported by the reliability degradation trend of the Non-Grid Enhanced circuits performance shown in my Direct Testimony.

Figure 2 – Grid Enhancement vs. Non-Grid Enhancement SAIDI Trend



[15] Responsive Testimony of Dennis Stephens, pg. 20.

OG&E has seen an increase in the volume of work found on Transmission and Distribution line inspections. For the period Mr. Stephens presents, these costs peaked in 2022, with a cost of approximately $91 million spent. These inspections and consequently the follow-on restoration work is necessary and should not be considered discretionary. These investments are required to ensure that OG&E complies with the National Electric Safety Code (NESC) as required by the Oklahoma Electric rules.

Q. **Other than increasing failure rates, have any other factors impacted the cost of spending?**

A. Yes. Inflation has had a significant impact on OG&E and Mr. Stephens fails to account for the true cost of inflation over the past several years. The cost of materials has increased at an unprecedented rate. To help illustrate the impact of inflation, in 2019, OG&E made approximately $87 million in material purchases for the Transmission and Distribution areas of the business. If OG&E were to try and purchase the exact quantity and specification of materials today, it would cost OG&E almost $135 million at the end of 2023. This represents a 55% increase in material costs alone.

Q. **What types of materials are driving the unprecedented increase in material costs?**

A. Conduit, Transformers, and Wire/Cable are the three categories that have seen the largest increases in cost. Conduit is almost four times what the cost was in 2019, transformers are almost two and a half times what the cost was in 2019, and wire and cable has almost doubled in price since 2019.

Q. **Has OG&E seen increases in labor costs?**

A. Yes, OG&E has seen significant increases in labor costs. As OG&E witness Shaffer shares in Table 3 of his Direct Testimony, Vegetation Management rates have increased 63% since 2015. Overhead and underground line construction rates have increased almost 35% since 2019.

Q. **Has OG&E taken steps to manage the cost of this replacement work?**

A. Yes. Instead of simply replacing poles that fail to meet National Electric Safety Code Standards ("NESC"),[16] OG&E has implemented a cost-effective approach of installing a truss to restore the pole to its original strength versus just replacing the existing pole with a new pole.

Q. **What is a truss and what does it do?**

A. A truss is a piece of formed steel with a cross section shape similar to the letter "C" that is approximately ten feet in length and is driven approximately five feet into the ground. The truss works by transferring the bending loads from the weakened portion of the pole to a portion of the pole that is structurally sound below the ground line.

Q. **Are all poles able to be restored with a truss?**

A. No, not all poles are able to be restored with a truss. Some poles have weakened to the point that there is no structurally sound section for the pole to transfer the bending load to the truss. In these cases, the pole must be replaced as the only option to restore strength.

WILDFIRE RISK

Q. **Have Mr. Stephens' recommendations properly accounted for the increasing risk of wildfire to OG&E's system and the need for investment to protect its customers?**

A. No. OG&E's service area has long been subject to the impact of extreme weather variables, including wildfires. While wildfire risk in our service area is not new, the Company is assessing whether wildfire potential days are projected to increase in our service area, due to increasing temperature and drought periods. To date, our service area has not been affected by wildfires to the extent that others have, however, the potential for wildfire poses a significant threat to public safety, property, economic conditions, and critical electric infrastructure in Oklahoma and western Arkansas.

[16] The NESC code mandates regular inspections of both Distribution and Transmission lines to ensure ongoing safe and reliable operations? One of the major requirements of the NESC is that when a pole is determined to have a remaining strength of less than 67% of its original bending strength it must either be restored or replaced.

Q. **How is OG&E planning to mitigate its wildfire risk?**

A. Currently, OG&E is actively developing a holistic plan for resiliency and risk mitigation for the OG&E service area. This plan will encompass many initiatives OG&E is already executing, including System Hardening, Vegetation Management, and Situational Awareness and Incident Response. While we have started work on many fronts that help mitigate wildfire risk, there is still more work to be done. Wildfire risk is a broad and expansive issue that is not unique to one industry, one entity, or one geographical location. The risk of wildfires presents a growing challenge for OG&E but also, as stated above, for the state of Oklahoma and Arkansas, and its citizens. To fully address the magnitude of the risk and support continued investment, state and local governments will need to work together to develop constructive mechanisms designed to reduce the impacts from wildfires in a safe, efficient, and cost-effective manner.

Q. **Do OG&E's Grid Enhancements investments help to mitigate wildfire risk?**

A. Yes. Investments in the current Grid Enhancement program are designed to improve reliability, harden against severe weather events, provide insight to predict and respond to grid variability, and enable the connection of distributed energy resources. While these investments are reliability focused, they can also help mitigate wildfire risk when combined with resiliency-focused investments and practices.

CONCLUSION

Q. **Do you have any concluding remarks?**

A. Yes. As my Rebuttal Testimony – and the testimony of my colleagues Kandace Smith and Robert Shaffer – has shown, the recommendations of PUD witnesses Mr. Stephens and Mr. Alvarez are without merit. These recommendations should be affirmatively rejected by the Commission in order to recognize the need for investment in Oklahoma's critical infrastructure. I request the Commission find OG&E's investments included in this rate review as reasonable and prudent and necessary for the safe and reliable provision of electric service.

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

A. Yes.

Rebuttal Exhibit BH-1
OG&E Response to PUD DR 15-11(d)(i)
PUD Witness Stephens Projects Disallowed - Already Deemed Prudent

WBS	WBS Description	Amount	In Service Date	AFE	AFE in other DR
K:00604-0005	TSB-PARK PLACE	149,319.90	9/2020	4954	
K:01121-0006	TSB-BLUEBELL-SUB-M3-B-RTU REPLACM	8,135.80	7/2023	5671	
K:01160-0002	TSB-TINKER 7 8677	704,443.52	8/2021	5759	PUD 9-11
K:01160-0010	TSB-SE 15TH ST	45,310.51	9/2022	5759	PUD 9-11
K:01160-0020	TSB-GLENDALE TSB-8650	32,450.62	9/2022	5759	PUD 9-11
K:01255-0004	TSB-WESTMOORE BREAKER	152,145.00	12/2020	N/A	
K:01303-0039	TSB-Type A-[redacted] NORTH OK GRID ENHANCEM	42,939.56	6/2020	7042	
K:01303-0115	TSB AUTO-MERIDIAN SUB OK GRID MOD	3,862.60	6/2021	7092	
K:01303-0289	TSB-RESILIENCY MERIDIAN SUB	4,182.86	6/2021	N/A	
K:01303-0314	TSB-RESILIENCY HANCOCK	38,070.01	6/2021	7087	
K:01373-0002	TSB-2020 FT SMITH BUSE TIE TRANS	11,606.01	6/2021	6379	
K:01381-0003	TSB-HORSESHOE LAKE FR REPLACEMENT	748,153.75	12/2022	7320	
K:01381-0004	TSB-CIMARRON FR REPLACEMENT	991,662.75	6/2023	7319	PUD 9-11
K:01381-0006	TSB-MUSKOGEE SUB FR REPLACEMENT	645,823.93	12/2022	7321	PUD 9-11
K:01381-0009	TSB-WOODRING FR REPLACEMENT	514,537.67	6/2023	8048	PUD 9-11
K:01390-0002	TSB-2020 SPARE 345KV REACTOR	1,629,552.04	6/2022	6472	
K:01456-0002	TSB-TYPE A - CLEO CORNER UPGR	1,137,824.00	6/2023	8796	
K:01458-0002	TSB-TYPE A - FORREST HILLS UP	66,806.53	12/2021	7471	
K:01463-0002	TSB-TYPE A - RENO UPGRADES	2,258,367.36	3/2023	7458	
K:01465-0002	TSB-[SUB NAME]-TYPE A - GLENDALE UPGRADE	1,322,125.50	9/2022	7831	
K:01466-0002	TSB-TYPE A - THIRTY-EIGHT ST.	15,325.49	2/2022	7473	
K:01532-0012	TSB-STANDING BEAR	1,902,944.76	3/2024	7175	
K:01532-0014	TSB-CONTINENTAL EMPIRE	1,397,129.81	3/2024	7175	
K:01532-0016	TSB-OSAGE	1,358,664.43	3/2024	7175	
K:01532-0022	TSB-WHITE EAGLE	1,140,004.39	3/2024	7175	
K:01538-0002	TSB-MAYSVILLE SUB-2021 TSER TRANSMISSION	4,741.79	12/2021	7876	
K:01538-0006	TSB-RP SW 5TH 138KV SWITCHES	659,885.51	6/2022	7369	PUD 9-11
K:01538-0010	TSB-RUSH CREEK SUB 2021 - TSER-T	284,054.88	4/2022	7878	
K:01549-0014	TSB-OSAGE-VARIOUS ARRESTERS	53,188.40	3/2022	N/A	
K:01549-0016	TSB-PINE STREET-LINE ARR	26,439.60	5/2022	N/A	
K:01550-0002	TSB-2021 MUSKOGEE SUB FENCE	102,449.75	3/2022	N/A	
K:01554-0030	TSB-NORTHWEST-RP BATTERY BANK	81,738.89	12/2022	N/A	
K:01554-0040	TSB-AGENCY RP BATTERY BANK	48,373.72	2/2023	N/A	
K:01555-0002	TSB-CIMARRON-BANK 1 RELAYING	254,158.48	6/2023	N/A	
K:01561-0002	TSB-REDBUD FLOOD REPAIR	1,260.55	9/2021	7293	
K:01561-0003	TSB-SIMMONS RIP RAP	630,232.00	5/2022	7295	PUD 9-11
K:01561-0006	TSB-IGO FLOOD PROJECT	195,214.61	6/2022	7297	
K:01561-0011	TSB-PARK VIEW RIP RAP	293,987.86	5/2022	7303	
K:01561-0012	TSB-SOUTHSIDE RIP RAP	302,294.69	5/2022	7464	
K:01744-0034	TSB-ARBUCKLE STATION B-1918	130,845.15	7/2022	N/A	
K:01744-0042	TSB- LONESTAR 138KV ARRESTORS (6)	37,257.56	12/2023	N/A	
K:01744-0061	TSB-ROADRUNNER EROSION ISSUE	115,601.49	1/2023	N/A	
K:01745-0002	TSB-2022 TRANS SUB EQUIP REPL SARA SUB	110,829.35	10/2022	N/A	
K:01745-0008	TSB-SW 22ND ST SUB	294,782.64	12/2023	N/A	
K:01750-0002	TSB-MCCLAIN TARGETED INFRASTRUCTURE	1,932,948.00	11/2023	8590	
K:01756-0002	TSB-PECAN CREEK BUS TIE TRANS	10,991,962.77	6/2023	7915	
K:01757-0002	TSB-[SUB NAME]-ADD REACTORS TO FT SMITH	1,801,204.64	4/2023	7896	
K:01816-0002	TSB-WOODWARD EHV DGA	366,854.30	6/2022	7957	
K:01816-0003	TSB-BEAVER DGA	174,765.24	6/2022	7957	
K:01835-0005	TSB-REDBUD LIGHTING UPGRADE	3,280,749.10	12/2023	7978	
K:02057-0010	TSB-[Kentucky]-2023 COMP TRANS	96,792.09	12/2023	N/A	
K:02117-0002	TSB-ARCADIA TRANS BK 2	4,577,787.79	5/2023	8575	
K:02120-0020	TSB-DILLARD SUB 138kV SWITCH	54,236.92	3/2024	N/A	

Rebuttal Exhibit BH-2
OG&E Response to OIEC 01-15
TSB-Arcadia Trans BK AFE

K:02117-2 Arcadia failed in service bus tie transf...

Summary Approvals Versions Audit View Related Actions

AFE 8575 - K:02117-2 Arcadia failed in service bus tie transformer bank 2

Project Information

Project Information

Project Name	K:02117-2 Arcadia failed in service bus tie transformer bank 2	**Jurisdiction**	OK
Business Unit	UTS		
Location	Arcadia substation		
AFE Status	Approved		
SAP Actuals	$5,119,510 as of 01/06/2024 09:04 PM	**SAP Service Status**	REL
SAP Service Update	01/11/2024 01:05 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Replace Failed in Service 345-138kV 400MVA bus tie transformer bank #2 and associated equipment. The replace transformer should arrive around February 2025 at price of $4,500,000. That is why the end date has been pushed to March. 2025.		
Capital Justification	345-138kV 400MVA bus tie transformer		
Project Justification Category	Reliability	**Units of Property**	345-138kV 400MVA bus tie transformer
Start Date	6/28/2022	**Functional Location**	TSB-8410
End Date	3/31/2025	**Planned In-Service Date**	3/31/2025
Multi-Year AFE	Yes	**Company Code**	0500
Term of Commitment	4 year	**Type of Spending**	Capital
Project Manager	Timothy Carter		

Financials

Capital Information

Capital Project Definition	K:02117
Capital WBS	
Capital PM Order/NWA	1651337

Capital Cost

Material or Salvage - Install	$5,800,000	**Material or Salvage - Remove**	$20,000
Internal Labor - Install	$50,000	**Internal Labor - Remove**	$15,000
Contract Labor - Svcs Install	$2,000,000	**Contract Labor - Svcs Remove**	$150,000
Other (Misc+Overhead) Install	$500,000	**Other (Misc+Overhead) Remove**	$50,000
Total	$8,350,000	**Total**	$235,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$8,585,000

Total AFE Amount after reimbursements

Rebuttal Exhibit BH-2
OG&E Response to OIEC 01-15
TSB-Arcadia Trans BK AFE

Further Information

Further Information

Statement of Risk	Failure to replace this Transformer and equipment would limit the ability of the system operators to provide system reliability. This would affect the load flows at the Arcadia substation.
List of Related Projects	None
Alternatives	No, alternatives for this project have been identified.
Project Sponsor	Robert Burch
Created By	Timothy Carter
Created On	Aug 31, 2022
Submitted On	Dec 12, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	1/18/2023
Shelby Coleman	Finance	Approved	1/18/2023
Scott Brunnert	Manager	Approved	1/18/2023
Christopher Lelak	Director	Approved	1/20/2023
Robert Burch	Officer	Approved	1/23/2023
Charles Walworth	Treasurer	Approved	1/23/2023
Donnie Jones	VP Utility Officer	Approved	2/8/2023
William Buckler	CFO	Approved	2/9/2023

Row Labels	Sum of Amount
Asset Improvement	**$ 50,329,376.19**
Failed in Service	**$ 40,972,185.12**
PECAN CREEK BUS TIE TRANS REPLACEMENT	**$ 10,968,001.54**
K:01756	$ 10,968,001.54
2021 TRANS SUB FIS	**$ 7,667,215.77**
K:01542	$ 7,667,215.77
2022 TRANSMISSION LINE FIS	**$ 6,569,661.09**
K:01743	$ 6,569,661.09
2022 TRANSMISSION SUB FIS	**$ 6,134,028.38**
K:01744	$ 6,134,028.38
ARCADIA TRANSFORMER REPLACEMENT	**$ 4,568,587.88**
K:02117	$ 4,568,587.88
2023 TRANSMISSION SUB FIS	**$ 1,564,448.67**
K:02120	$ 1,564,448.67
2020 FIS TRANSMISSION SUB	**$ 1,465,895.35**
K:01391	$ 1,465,895.35
2023 TRANSMISSION LINE FIS	**$ 1,142,611.53**
K:02121	$ 1,142,611.53
RBLD TRANS SUBSTN EQP SUBSTN **DSRT**	**$ 891,734.91**
3:04767	$ 891,734.91
New Business	**$ 36,111,529.55**
Storm	**$ 13,752,900.63**
Tinker	**$ 11,619,487.84**
Projects under $500k	**$ 5,702,784.23**
Relocates	**$ 2,666,795.86**
Grand Total	**$ 161,155,059.42**