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 RATES, CHARGES, AND TARIFFS FOR RETAIL ELECTRIC SERVICE IN OKLAHOMA	))))))	CASE NO. PUD 2023-000087

Direct Testimony

of

Robert Doupe

On behalf of

Oklahoma Gas and Electric Company

December 29, 2023

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

A. My name is Robert Doupe. My business address is 321 North Harvey, Oklahoma City, Oklahoma 73102.

Q. **By whom are you employed and in what capacity?**

A. I am employed by Oklahoma Gas and Electric Company ("OG&E" or "Company") as Director, Power Supply Services.

Q. **Please summarize your professional and educational background.**

A. I have a Bachelor of Science degree in Mechanical Engineering from University of Missouri – Rolla (now known as Missouri University of Science and Technology). I have been employed by OG&E for the last 23 years in several positions of increasing responsibility including engineering, maintenance, and operations. I began my career with OG&E in 2000 as a Process/Maintenance Engineer at the Horseshoe Lake and Mustang Power Plants. In March of 2005, I moved to the Power Supply Services group as a Staff Mechanical Engineer. In 2008, I became the Superintendent of Power Generation – Coal at Sooner Power Plant. In 2011, I became the Director of Redbud Power Plant, and in 2017, I became Director of the Horseshoe Lake Power Plant as well. In February 2021, I transitioned into the role of Director of Power Supply Services.

In my current role, I am responsible for the operations and maintenance of engineering functions and the management of capital projects for all of OG&E's thermal generation fleet. In this role, I supervise a team of approximately 80 members including engineers, project managers, and construction services personnel. In addition, I supervise the asset condition monitoring organization that is accountable for the predictive maintenance technologies OG&E deploys to monitor and analyze the condition of our plants. I have worked at several OG&E Plants throughout my career either as a member of the plant or as a Power Supply Services Engineer. Overall, my experience as an engineer and leader at different levels throughout Power Supply has allowed me to become well versed in the operations and maintenance needs of the OG&E fleet.

Q. **Have you previously testified before the Oklahoma Corporation Commission?**

A. Yes, I have filed testimony in Cause Nos. PUD 202100072, PUD 202100118, PUD 202100164, and PUD 202200057.

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

A. The purpose of my testimony is to support the Company's capital investments at its thermal generating facilities. My testimony will be broken out by the major capital projects at each of the corresponding power plants and will include a general discussion around the circumstances and the need for those investments for continued safe and reliable operation of the facilities.

INTRODUCTION

Q. **Please describe OG&E's maintenance program.**

A. OG&E has a robust asset management program that looks at an asset's overall health. The asset's overall health is determined by evaluating the Original Equipment Manufacturer ("OEM") recommendations, historical trends, and asset condition and performance. OG&E uses industry standards to prioritize the maintenance strategy and determine if additional sensors, continuous or intermittent, are needed to appropriately track the asset and schedule maintenance. For assets that are new, non-critical to generation, or uncomplex, OG&E may elect to use the OEM's suggested maintenance plan. These plans are often sufficient for the small non-critical assets only. As equipment becomes more complex or critical to generation reliable operations, OG&E evaluates asset's history to determine if routine time-based maintenance will prevent most failures and limit the impact to generation operations and generation supply to our customers.

If the asset is particularly complex or very critical to generation, like a steam turbine, OG&E uses OEM guidance, industry standards and best practices, and our own maintenance history to develop a maintenance plan that will include continuous, online monitoring of major components. Online monitoring will indicate deviations from accepted reliability and performance, often using advanced prediction analytics. OG&E will couple this advanced monitoring with accepted internal maintenance strategies to

ensure the appropriate maintenance is performed. Once any issues are identified, projects are developed and budgeted to address the identified operational issues.

Q. **Please summarize the major thermal generation capital projects and explain why they were necessary.**

A. The major capital projects are summarized in Table 1 below and attached as Direct Exhibit RD-1. These projects were identified by OG&E engineers to address safety, performance, or reliability issues. Table 1 below is a list of major capital projects at OG&E's thermal generating units that total approximately $154 million.

Table 1 – Major Capital Projects

Power Plant/Unit	***AFE/Description***
Seminole Plant Unit 3	AFE 7194 Turbine Modernization Project
Seminole Plant Unit 3	AFE 7789 Reheater Replacement
Seminole Plant Unit 3	AFE 6154 & 7598 Generator & Exciter Retaining Ring Replacement
Seminole Plant	AFE 7818 Tainter Gate Replacement
Seminole Plant	AFE 7198 Intake Piping Replacement
Seminole Plant	AFE 7638 River Well Upgrade
Muskogee Plant Unit 6	AFE 8106 Precipitator Roof Replacement
Muskogee Plant Unit 4/5	AFE 6424 City Water Supply Line
Muskogee Plant Unit 6	AFE 8060 Pulverizer Improvements
Muskogee Plant Unit 5	AFE 8783, 8622, 8429 Generator Major Rotor Discovery
Muskogee Plant Unit 5	AFE 7716 Cooling Tower Motor Control Center
Frontier Plant Unit 1	AFE 8466 Combustion Hardware Upgrade
Frontier Plant Unit 1	AFE 7933 Plant Controls Upgrade
Mustang Plant Units 6, 8, 9, 10	AFE 8518, 8443, 8148, 8154 Replace CT Module 8/LP Section

McClain Power Plant	AFE 7993 Mark VIe & Overspeed Trip Protection Upgrade
River Valley Plant	AFE 7679 Water Treatment Project
River Valley Plant Units 1, 2	AFE 8670 Coal Silo Liner Upgrade
Sooner Plant Unit 2	AFE 8068 Bottom Ash Transport Effluent Limitation Guidelines

SEMINOLE POWER PLANT

Q. **Please explain the Seminole Power Plant Unit 3 – AFE 7194 Major Turbine Outage.**

A. Seminole Unit 3 was scheduled for a major turbine overhaul in 2020 to address issues in the main steam turbine. The overhaul was to disassemble, clean, and inspect the turbine and address any known issues in the turbine that had been previously identified during inspections, OEM Technical Information Letters ("TIL"), or based off similar units in the system.

OG&E also evaluated a turbine modernization project that would upgrade and replace the High Pressure ("HP"), Intermediate Pressure ("IP"), and both Low Pressure turbine sections. The Scope included the HP_IP Monoblock rotor fully bladed with advanced impulse type rotating blades, new HP-IP inner casing, HP-IP diaphragm and carriers, new fabricated steel LP inner casing, new fully bladed LP double flow rotors, new LP blade carriers, perform a Boiler Study, Fine Screen Outage, new hardware, servo valves replacement, NRV Inspections, Oil and EH system flushes, and Final Performance Test. The turbine modernization project improved the unit's efficiency and increased the unit's maximum capacity.

During the turbine modernization project execution, additional equipment issues were identified once the internal components were exposed. These issues were not identified or known during the original scope development and were added to the project to meet the project objectives. The work was required to ensure the reliability and functionality of the steam turbine.

Q. **Please explain the Seminole Power Plant Unit 3 – AFE 7789 Reheater Replacement?**

A. This project was to replace the Seminole Unit 3 re-heater, Secondary Superheat, and Primary Superheat Outlet tube bundle assemblies in the boiler. These components were the original equipment (1975) and were at the end of their useful life. This project provides greater unit reliability and availability by a reduction in unplanned outages due to tube leaks.

Q. **Please explain the Seminole Power Plant Unit 3 – AFE 6154 and 7598 Generator and Exciter Major Overhauls.**

A. The primary objective of the Seminole Power Plant Unit 3 generator and exciter major overhaul was to replace the retaining rings of the generator and exciter rotors. Prior to the work completed during 2022, both rotors had the original 18-5 MnCr alloy steel retaining rings which are more susceptible to moisture-wrought Stress Corrosion Cracking ("SCC") than modern 18-18 alloy rings. Tasked with "retaining" the rotor end windings in place at 3600 RPM, the retaining rings undergo physical stress from the centrifugal force of the end windings during operation. SCC and related fatigue can lead to in-service failure of the retaining ring, with the retaining ring destroying and exiting the generator frame. A case of a retaining ring failure is extremely rare, but potentially catastrophic. As a fleet initiative, OG&E has replaced all 18-5 MnCr alloy steel rings due to safety concerns.

Additionally, the Unit 3 generator rotor had several OEM TILs that required action. The first, TIL-1292, requires the rotor wedges to be removed to perform eddy current inspection of the rotor dovetails slots. Per the TIL, hairline cracking of the slot dovetails can result in in-service wedge liberation. When identified, the dovetails can be machined to prevent further propagation. This inspection can be performed without removing the coils, although extreme care is required to prevent debris from machining efforts to enter the coils.

The second TIL, TIL-965, addressed copper dusting of the rotor windings. Unit 3 rotor has "half-turn" design rotor windings, which consist of two bare copper bars with a cooling slot machined into the mating surface of each bar to form a hollow cooling channel down the length of the bar for hydrogen circulation. With this design, relative movement between the bare copper "half turns" can cause copper "dust" as a byproduct. This dust

can collect and create shorts between the windings and the rotor forging, which would require a rewind to address. The copper dusting can be addressed either by inspection, cleaning, and installing new material in the rotor slot exit or via rewind.

Based on the combined planned work scope for the retaining ring upgrade, the TIL-1292 inspection, and the TIL-965 upgrade, for efficiency OG&E elected to rewind both rotors during the planned outage to complete all the required work. Based on the vintage of the copper windings as well as recent findings on similar units (2020 SO02 exciter rewind), OG&E chose to purchase new copper coils.

For the stator, multiple TILs and major overhaul activities were accomplished, including TIL-2106 (flex lead replacement), TIL-1098 (hydraulic integrity testing), and electrical testing and inspections. These were mostly completed with limited findings. However, significant cracking was found in the exciter grout when the exciter was removed for shop work. As a change order, the grout was removed and repoured by the OEM.

Q. **Please explain the Seminole Power Plant – AFE 7818 Tainter Gate Replacement.**

A. The purpose of this project was to replace components of the tainter gate to restore full functionality. The project included restoration of stop logs and lifting beam, a new tainter gate, new gate operating motors and components, and motorizing the open/close of weir apron. The dam at Konawa Lake is equipped with a tainter gate on the spillway to control lake level during high rainfall events. The gate is approximately 32 feet wide by 26'-5" high and was operated by a stationary electric operated cable hoist assembly with a hand operated control for emergency use. There was a manually adjustable apron weir on top of the gate to control the lake level, however, the tainter gate was inoperable leaving the emergency spillway as the only means to discharge excess water during these events. Discharging through the emergency spillway causes damage to the property behind the dam. Further deterioration of the tainter gate could have caused leakage with the potential of not being able to control the lake at a minimum level that affects the operation of the plant. A dam inspection conducted by Guernsey Engineering in 2015 noted that the inoperable tainter gate could be a serious safety issue during flood events. Another inspection in 2021 shows the gate to be in an inoperable condition with some significant damage.

Q. **Please explain the Seminole Power Plant – AFE 7198 Intake Piping Replacement.**

A. The purpose of this project was to remove the piping underneath the intake structure and to replace it with new piping located above the intake structure to improve accessibility and safety for future repairs. External corrosion had compromised the integrity of the piping systems that support the traveling screens on the plant circulating water system. The new piping was installed on the inlet overhead rack.

Q. **Please explain the Seminole Power Plant – AFE 7638 River Well Upgrade.**

A. The purpose of this project was to restore as many water wells to service as possible, providing for more reliable and dependable operation of the Seminole Power Plant. The "River Wells" at Seminole Power Plant supplement make-up water to Lake Konawa when the South Canadian River cannot provide an adequate supply of water. This occurs most often during the summer months when lake water levels drop due to evaporation. Many of the River Well Pumps had failed in service and required replacement to continue meeting the needs of our customers for reliable electricity. The existing pumps and motors are obsolete and cannot be replicated, requiring new pumps and motors to be installed.

MUSKOGEE POWER PLANT

Q. **Please explain the Muskogee Unit 6 – AFE 8106 Precipitator Roof Replacement.**

A. The purpose of this project was to replace the precipitator roof to prevent moisture and tramp air from entering the precipitator that results in corrosion and improper operation. The water mixed with the fly ash was causing fly ash to build up and harden in the precipitator and precipitator hoppers. This prevents the precipitator from operating as intended which leads to significant O&M cost and regular maintenance outages to prevent forced outages or opacity exceedances. The project included a new precipitator hot and cold roofs on the first three fields, new Discharge Electrode support frames in the first two fields, redesigned Collector Electrode support frame, and new insulator compartments on the first four fields.

Q. **Please explain the Muskogee Power Plant Units 4 and 5 – AFE 6424 City Water Supply Line.**

A. The purpose of the project is to provide potable and process water needs to Muskogee Power Plant. The Muskogee plant previously got all its potable water and a significant portion of its process water from the City of Muskogee. The water line that supplied the plant from the City of Muskogee was attached to the Arkansas River bridge. The Oklahoma Department of Transportation had a planned project to improve the bridge. The water line was scheduled to be removed from the bridge, which would disrupt the water flow to the plant and impact its ability to operate. The new bridge was not permitted to support water lines. The project was completed in two phases, the first was to address the immediate need for potable water, and the second was for a long-term solution to supply process water. Potable water was secured through an existing water line from the City of Fort Gibson near the plant. This existing Fort Gibson water line was not large enough to meet both potable and process water demands for the plant. The second phase was to establish a water source to provide process water to the plant. An Ultra filtration skid was installed upstream from the existing Muskogee Unit 4/5 water treatment system that allows for water to be pulled from the Arkansas river and treated to supply the process water.

Q. **Please explain the Muskogee Power Plant Unit 6 – AFE 8060 Pulverizer Improvements.**

A. The purpose of the project was to reduce boiler slagging by improving overall boiler combustion efficiency through implementation of six (6) mill modernizations and burner upgrades to the coal feed and pulverization system. Muskogee Unit 6 suffered from frequent slagging, requiring the unit to drop load every few nights to remove slag build-up from the boiler. This project included all boiler tuning services, testing, and replacement of existing mill components with the following new modernized and upgraded components: rotating vane wheel cast deflectors, journal liners, CE 983 segmented classifier cones, high spin static classifiers, multi-outlet diffusers, CV-style adjustable orifices, and mill bottom hardfacing.

Q. **Please explain Muskogee Power Plant Unit 5 - AFE 8783, 8622, 8429 Generator Major Rotor Discovery.**

A. The following projects were executed to resolve issues that were identified during the generator inspection on Muskogee Unit 5:

- AFE 8783 Generator Rotor Insulation and Blocking Replacement.

  Significant damage to the top strap channel and damper bars along with blocking issues were identified and had to be addressed before returning the unit to service. Work completed included the replacement of 32 top strap channels with upgraded design, upgraded material on the blocking element, and the replacement of the ripple springs with a newer technology.

- AFE 8622 Air Gap Baffle ("AGB") Replacement.

  The AGBs are essential to the performance of the generator. The design of the old AGBs makes the removal difficult and leads to damage during removal process. The OEM identified the AGB as a potential issue during disassembly of the rotor. Continuing to operate the unit with the old AGBs in service would expose the unit to the risk of mechanical failures and unit availability issues.

- AFE 8429 Generator Bushing Replacement.

  During an inspection of the generator lead box in 2022 significant greasing of the porcelain on 4 out of the 6 High Voltage Bushings ("HVB") was identified. Also identified in the inspection were signs of the HVB gaskets failing, which would allow hydrogen and oil to leak from the generator lead box. Two HVBs were ordered and installed during the 2022 spring outage to address the worst two bushings. Failure of the bushings or the bushing support systems could result in an electrical fault with the potential for major damage to the generator. This project was for the purchase of the remaining four HVBs that were installed in the spring of 2023, along with the electrical testing and certification of the new bushings and stator windings.

Q. **Please explain the Muskogee Power Plant Unit 5 – AFE 7716 Cooling Tower Motor Control Center ("MCC").**

A. This project was executed to replace the Cooling Tower MCC. The MCC is obsolete and obtaining replacement parts is difficult and costly. The inadequate breaker stab-bus connections have caused arcing within the MCC creating an arc flash safety hazard for our members. The MCC was upgraded to an ARC-Resistant Switchgear. During execution of the project, additional damage was identified to the MCC feed from the transformer. The feeder cables were starting to break down due to the environment that the MCC operates in. In order to address this issue, additional engineering was done to move the MCC feeds to the bottom of the new gear.

FRONTIER POWER PLANT

Q. **Please explain the Frontier Power Plant Unit 1 – AFE 8466 Combustion Hardware Upgrade.**

A. The purpose of the project is to replace Frontier's 8k (8,000 fired hour) combustion hardware with an upgraded 32k (32,000 fired hour) combustion hardware. Frontier's 8k hardware was at the end of its serviceable life. Based on Frontier's operational profile, the 8k hardware was required to be replaced or repaired on approximately 2-year intervals. The upgraded 32k hardware will extend the interval to roughly 8 years, which will eliminate a number of maintenance intervals throughout the hardware's serviceable life.

Q. **Please explain the Frontier Power Plant Unit 1 – AFE 7933 Plant Controls Upgrade.**

A. The purpose of the project is to replace Frontier's Distributed Control System ("DCS"). The old DCS at Frontier had reached the end of its serviceable life. The DCS was no longer supported by the OEM and parts were difficult to source. In order for Frontier to remain a reliable asset in the OG&E fleet, the DCS needed to be replaced with a modern system that is supported by the OEM. The DCS upgrade includes the controls system for the Gas Turbine, Steam Turbine, both Generators, and balance of plant systems.

MUSTANG POWER PLANT

Q. **Please explain the Mustang Power Plant Units 6, 8, 9, and 10 – AFE 8518, 8443, 8148, and 8154 Replace CT Module 8/LP section.**

A. Mustang Unit 6, 8, 9, and 10 all experienced a failure in the Low-Pressure turbine section (Module 8) due to a bearing race fit issue. The units were removed from service and shipped to depot for replacement of the Module 8 section then returned to service. During the disassembly and inspection of the engine, discovery work was identified in Mustang 6. Debris was found on Modules 2, 3, and 5 chip detectors, along with spalling on the center bearing requiring replacement. The High-Pressure Turbine seals were cracked, also requiring replacement before Mustang 6 could be returned to service.

McCLAIN POWER PLANT

Q. **Please explain the McClain Power Plant all three units – AFE 7993 Mark VIe and overspeed Trip Protection Upgrade.**

A. The purpose of this project was to upgrade the existing Mark VI Platform turbine control hardware and software with Mark VIe hardware and software for all three Units at the McClain Power Plant. The project also included logic upgrades to overspeed trip testing functionality for all three Units. The Mark VI Platform is no longer supported and is being phased out. In order to have our platform supported and serviceable, migration to Mark VIe was needed which also delivers significant performance enhancements and an improved control system lifecycle. The logic upgrade to overspeed trip testing functionality upgraded the unit to trip at a lower setpoint during unit overspeed trip testing. This greatly reduces fatigue to the unit by not actually over speeding the unit during testing.

RIVER VALLEY POWER PLANT

Q. **Please explain the River Valley Power Plant – AFE 7679 Water Treatment Project.**

A. The purpose of this project was to upgrade the water treatment system at River Valley with a new Ultrafiltration/Reverse Osmosis/Electrodeionization system. The old system contained equipment that had already failed in service or was exhibiting end-of-life properties. The Programmable Logic Controller Human Machine Interface had failed years ago and was effectively unusable. The clarifier needed significant investment to become reliable, and many of the tanks were being patched regularly. The old system was

roughly 30 years old and required updating to continue meeting the needs of our customers for reliable electricity. Failure to replace this old system increased the risk of unit reliability or availability.

Q. **Please explain the River Valley Power Plant Units 1 & 2 – AFE 8670 Coal Silo Liner Upgrade.**

A. This project added a carbon steel liner to each of the twelve coal silo cylinders. The coal silos have experienced metal loss since installation in 1991, causing thinning to the silo rings. These rings had been patched to manage coal spillage, but the thinning had progressed to the point that structural integrity of the silo walls was a concern. By replacing the liners and adding new silo rings inside of the existing rings adding back to the material provided additional thickness without having to demo the existing structure. The addition of the liners and new rings extended the life of the silos and reduced the risk of impacting unit availability and potential for fugitive dust compliance issues.

SOONER POWER PLANT

Q. **Please explain the Sooner Power Plant Unit 2 – AFE 8068 Bottom Ash Transport Effluent Limitation Guidelines ("ELG").**

A. The purpose of this project was to comply with the EPA's ELG Rule that is scheduled to take effect December 31, 2025. The rule will limit daily discharge of transport water from Bottom Ash Systems to a 30-day rolling average of 10% of the wetted system volume (excluding any ash process/cooling ponds). Sooner Plant's existing water impounded Bottom Ash System utilizes sluiced transport water as its primary material mover. Sooner's wetted system volume is estimated at 1.16 million gallons. Therefore, the new rule will allow a maximum daily discharge from the system of 116 thousand gallons, or an average of 81 GPM. The original design basis for the Sooner's existing system exceeds this amount by up to 275 thousand gallons per day, or an average of 191 GPM. Due to the Sooner Plant having a cooling pond within the existing system, design/operation makes it difficult to comply with this rule, particularly during high rainfall events where we must manage additional transport water discharged from the system. Leaving the system as it currently operates was not a viable alternative due to the above-mentioned

design/operational challenges in meeting rule compliance. The new submerged flight conveyor technology will eliminate 70% of the existing bottom ash equipment, majorly reducing the size and complexity of the system. The submerged flight conveyor systems are not affected by rainfall and will not place the plant at compliance risk during high rainfall events. The new system also removes the need to have multiple settling/recycle basins and an ash cooling pond within the system's process loop. This will remove the need to have any surface or sub surface impoundments within the process loop directly designated as "ash handling".

Q. **What is your recommendation to the Commission?**

A. I recommend the Commission accept those projects discussed above and all other production projects placed into service as prudent and reasonable for recovery in OG&E's retail rates.

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

A. Yes.

AFFIDAVIT

STATE OF OKLAHOMA)
)
COUNTY OF OKLAHOMA)

On the 28th day of December 2023, before me appeared Robert Doupe, to me personally known, who, being by me first duly sworn, states that he is the Director of Power Supply Services for Oklahoma Gas and Electric ("OG&E") and acknowledges that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge, and belief.

Print Robert Doupe

Signature _____

Subscribed and sworn to before this 28th day of December, 2023.

_____
Notary Public

My commission expires: 10-17-2026

Seal

Direct Exhibit RD-1

SM03-CAP Generator Retaining Ring Replacement

Summary | Approvals | Versions | Audit View | Historical Dashboard | Related Actions

AFE 6154 - SM03-CAP Generator Retaining Ring Replacement

Project Information

Project Information

Project Name	SM03-CAP Generator Retaining Ring Replacement	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	3
AFE Status	Approved		
SAP Actuals	$5,699,917 as of 10/06/2023 10:14 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:30 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Version 1 The purpose of this project is to replace the 18-5 generator retaining rings with 18-18 alloy per GE TIL 1001. In addition the following scope will occur during the retaining ring replacement: TIL 1292, field rewinds for generator rotor, and new field insulation. Version 2 - 4/8/21 Adding scope and cost for new copper rewind for both exciter and generator rotors, additional hydrogen coolers inspection, Dovetail enhancements, collector ring replacement, and replacement of flexible leads. Version 3 - 4/23/21 Removing exciter scope from project and including rewind with new copper, additional flex leads replacement, hydrogen cooler inspections, and new collector rings in addition to the retaining rings replacement and dovetail enhancements.		
Capital Justification	OEM recommends TIL 1001 for safety and reliability to replace 18-5 with 18-18 metallurgy. The retaining rings require replacing due to potential safety and reliability concern. There could be catastrophic failure in service if retaining rings are not upgraded.		
Project Justification Category	Safety	**Units of Property**	Generator Retaining Ring
Start Date	4/8/2021	**Functional Location**	SM-03-TB
End Date	8/26/2022	**Planned In-Service Date**	6/1/2022
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Robbie Gildenblatt		

Financials

Capital Information

Capital Project Definition	G:00909
Capital WBS	Capital WBS not specified
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$1,500,000	**Material or Salvage - Remove**	Material or Salvage - Remove not specified
Internal Labor - Install	$640,750	**Internal Labor - Remove**	$74,625
Contract Labor - Svcs Install	$3,050,000	**Contract Labor - Svcs Remove**	$300,000
Other (Misc+Overhead) Install	$460,750		

Total $5,651,500

Other (Misc+Overhead) Remove Other Remove not specified

Total $374,625

Total Summary

Third Party Reimbursements Third Party Reimbursements not specified

Partner Reimbursements $0

Total (Net) $6,026,125

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk

A mechanical failure of the retaining rings would result in catastrophic failure of the generator and member life safety.

List of Related Projects G:01075 SM3 Turbine Train Modernization
G:02484 SM03 Exciter Retaining Rings

Alternatives

During TIS, alternatives such as O&M inspections were presented but the scope in this AFE was approved.

Project Sponsor Matthew Schuermann

Created By Robbie Gildenblatt

Created On Jul 20, 2019

Submitted On Jul 20, 2019

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	5/6/2021
Joseph Chancellor	Finance	Approved	5/6/2021
Kelly Casey	Manager	Approved	5/6/2021
Robert Doupe	Director	Approved	5/11/2021
Matthew Schuermann	Officer	Approved	6/11/2021
Charles Walworth	Treasurer	Approved	6/11/2021
Donnie Jones	VP Utility Officer	Approved	6/11/2021
William Buckler	CFO	Approved	11/16/2021

Direct Exhibit RD-1

MK99-CAP City Water Line from Ft. Gibson

Summary | Approvals | Versions | Audit View | Historical Dashboard | Related Actions

AFE 6424 - MK99-CAP City Water Line from Ft. Gibson

Project Information

Project Information

Project Name	MK99-CAP City Water Line from Ft. Gibson	**Plant**	Muskogee
		Unit	99
Business Unit	Power Supply		
AFE Status	Approved		
SAP Actuals	$6,378,953 as of 10/06/2023 10:13 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:29 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose We had to delay this project due to not able to tie in during the summer run to reduce the risk of creating unplanned outages on all units, which created additional rental costs and materials costs. Stand down times. We also had to add additional cost for demo that were not included in the original AFE estimated costs.;

The purpose of the project is to provide potable and process water needs to Muskogee Power Plant due to the loss of water source from the city of Muskogee due to the planned ODOT project on the highway 62 bridge over the Arkansas River. Version 2 of this AFE was approved to begin the engineering for the process water options and complete the potable water portion, which was to tie into the city of Ft. Gibson water line and is now complete. This version 5 of the AFE is for the detailed engineering, purchase and installation for the process water portion of this project. The recommended option is to install new ultrafiltration equipment, electronic deionization equipment, relocate the reverse osmosis equipment, and chemical storage tanks, ;

The purpose of the project is to provide Muskogee Power Plant with potable and process water. The city of Muskogee waterline on the highway 62 bridge is scheduled to be removed first quarter of 2021. This will interrupt water supply to Muskogee Power Plant. Alternative analysis showed the best option was to purchase potable water from the city of Fort Gibson and make process water from the Arkansas River.

4/14/21 - Version 5
This Version 5 was presented at the technical investment strategy on March 30, 2021 and is to complete the detailed engineering, purchase, and install equipment for the process water portion of this project. The preferred option is to install new ultrafiltration equipment, electronic deionization equipment, relocate the reverse osmosis equipment, and new chemical storage tanks,

Version 3 and 4 were generated to address administrative issues of the AFE.

1/12/21 - Version 2
Revising for updated scope to finish the potable waterline from the city of Fort Gibson and start the engineering for the process water portion of this project.

Muskogee Power Plant's potable water is supplied from a six and eight inch ductile iron pipe that is supported on the nearby Highway 62 bridge that crosses the Arkansas River. ODOT's five-year plan is to replace the bridge. This will remove the current water supply from service.

This project will shift the plants potable water supply to the City of Fort Gibson and will install systems to allow the plant to process Arkansas river water to produce process water for producing steam.

Capital Justification The water treatment equipment is being replaced with modern equipment. The modern equipment is an upgrade over the existing and will provide a benefit by reduced chemical usage.

Project Justification Category	Reliability	**Units of Property**	1
Start Date	1/12/2021	**Functional Location**	MK-99
End Date	12/16/2023	**Planned In-Service Date**	12/16/2023
Multi-Year AFE	Yes	**Company Code**	0001
Term of Commitment	3 year	**Type of Spending**	Capital

Project Manager Phillip Garner

Proj Manager Alt. Leslie Crowder

Financials

Capital Information

Capital Project Definition G:00565

Capital WBS Capital WBS not specified

Capital PM Order/NWA Capital Order not specified

Capital Cost

Material or Salvage - Install	$2,185,750	**Material or Salvage - Remove**	$112,000
Internal Labor - Install	$230,000	**Internal Labor - Remove**	$81,000
Contract Labor - Svcs Install	$2,575,000	**Contract Labor - Svcs Remove**	$575,000
Other (Misc+Overhead) Install	$709,000	**Other (Misc+Overhead) Remove**	$210,000
Total	$5,699,750	**Total**	$978,000

Total Summary

Third Party Reimbursements $0

Partner Reimbursements $0

Total (Net) $6,677,750

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk

The current practice of supporting water lines using bridge infrastructure is no longer allowed. Not replacing the volume of lost water would mean the plant can't operate more than 2 units on a sustained basis.

List of Related Projects Projects covered as part of this AFE.
1. Install a new UF / EDI skid as part of Unit 4/5 water treatment
2. Relocate the existing Unit 4/5 RO into the same building as the remainder of the process equipment
3. Design new electrical distribution equipment & re-locate un-used power from 4/5 into the Unit 6 building, where there is current an power shortage (usually in winter).

Alternatives 1. Bore under Arkansas River and continue to purchase water from City of Muskogee
2. Run a dedicated line to the City of Fort Gibson. Purchase water from FG.
3. Install a UF skid in Unit 4/5 WT Building to produce process water from river water. Buy Potable water from FG.
4. Replace Unit 4/5 equipment with a new UF/EDI and produce process water from river water. Buy Potable water from FG.
Option 4 was recommended to TIS.

Project Sponsor Jonathan Stogsdill

Created By Kaitlin Radford

Created On Apr 13, 2020

Submitted On Apr 13, 2020

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	2/14/2023
Stacy Randall	Finance	Approved	2/14/2023
Kelly Casey	Manager	Approved	2/16/2023
Robert Doupe	Director	Approved	2/24/2023
Matthew Schuermann	Officer	Approved	5/2/2023
Charles Walworth	Treasurer	Approved	5/2/2023
Donnie Jones	VP Utility Officer	Approved	5/10/2023
William Buckler	CFO	Approved	5/30/2023

Direct Exhibit RD-1

SM03 - CAP Turbine Train Modernization

Summary Approvals Versions Audit View Related Actions

AFE 7194 - SM03 - CAP Turbine Train Modernization

Project Information

Project Information

Project Name	SM03 - CAP Turbine Train Modernization	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	3
AFE Status	Approved		
SAP Actuals	$40,735,610 as of 10/06/2023 10:11 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:26 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose

Rev 1 - 3/29/23
REV 1 of AFE 7194 is requesting additional funding of $9.5M for the below additional scope and discovery items found during execution:
Steam Blow scope addition which Includes but not limited to: EPC on steam blow piping, blow kits, supplemental water supply, contract execution support, scaffolding and insulation, extended internal labor support
Bearings repairs including T1-5, T6, T7, and T8 Bearing Repairs
Valves repairs including but not limited to MSV NRV, RSV, IV and CV repairs: new material for studs/bolts/gaskets, leakoff flanges, balance chamber repairs, NRV flapper mods, bolt hole repairs, blow kit install and removal for fine screens
Mechanical and Structural Discovery items including but not limited to LP LH Casing Strut Repairs, HP Outer Shell bolting modifications, extraction line cleaning, oil deflector repairs, basket tip piping replacement, bull gear fit mods, extended oil flush, additional turbine oil, LP Manway door repair.
Revision also includes updated spend by year, and updated completion date.;

Seminole Unit 3 (SM03) steam turbine is due for a major maintenance overhaul. OG&E is evaluating alternatives that meet the objectives of a steam turbine overhaul and provide benefit to our customers. A measurable benefit to our customers is increased unit efficiency, which reduces fuel costs. OG&E believes that modern steam turbine technology would allow its customers to realize these fuel cost savings while optimizing the life-cycle costs of SM03 steam turbine.

The Turbine modernization project intends to: Upgrade and replace the HP IP, and both LP sections. The scope also includes HP-IP Monoblock rotor fully bladed with advanced impulse type rotating blades, New HP-IP inner casing, HP-IP diaphragm and carriers, new fabricated steel LP inner casing New fully bladed LP double flow rotor, new LP blade carriers, perform a Boiler Study, Fine Screen Outage, new hardware, servo valves replacement, NRV Inspections, Oil and EH system flushes, and Final Performance Test.

Capital Justification This project is capital due to the procurement of newly designed rotors, blades, and retaining rings being installed for Unit 3.

Project Justification Category	Reliability-Mechanical Integrity	**Units of Property**	Turbine
Start Date	10/9/2020	**Functional Location**	SM-03-T
End Date	6/30/2023	**Planned In-Service Date**	6/30/2022
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	4 year	**Type of Spending**	Capital

Project Manager Robbie Gildenblatt

Financials

Capital Information

Capital Project Definition	G:01075
Capital WBS	G:01075
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$18,100,000	**Material or Salvage - Remove**	$0
Internal Labor - Install	$1,600,000	**Internal Labor - Remove**	$200,000
Contract Labor - Svcs Install	$17,000,000	**Contract Labor - Svcs Remove**	$2,900,000
Other (Misc+Overhead) Install	$3,000,000	**Other (Misc+Overhead) Remove**	$0
Total	$39,700,000	**Total**	$3,100,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$42,800,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Air Quality Group has confirmed "The project will not result in an increase in fuel consumption, nor will potential short-term emissions increase as a result."

The risk of not performing this project will result in replacing the upgrade and efficiency gains with a $15M overhaul in the near future to keep mechanical integrity through the units remaining life span.

List of Related Projects H:02155 - SM3 Turbine Modernization O&M work

Alternatives If we do not do the full modernization project, we will not see any efficiency gains in Unit 3, and still anticipate the requirement of a $15M Overhaul outage to inspect, repair, and replace many items within the scope of work in order to meet the Units intended life-span.

Project Sponsor Scott Lee

Created By Robbie Gildenblatt **Created On** Nov 9, 2020

Submitted On Nov 23, 2020

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	3/30/2023
Eduardo Escobar	Finance	Approved	4/7/2023
Kelly Casey	Manager	Approved	4/10/2023
Robert Doupe	Director	Approved	4/10/2023
Matthew Schuermann	Officer	Approved	5/2/2023
Charles Walworth	Treasurer	Approved	5/2/2023
Donnie Jones	VP Utility Officer	Approved	5/10/2023
William Buckler	CFO	Approved	5/30/2023
Sean Trauschke	CEO	Approved	-

Direct Exhibit RD-1

SM99 Intake Piping Replacement

Summary Approvals Versions Audit View Related Actions

AFE 7198 - SM99 Intake Piping Replacement

Project Information

Project Information

Project Name	SM99 Intake Piping Replacement	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	99
AFE Status	Approved		
SAP Actuals	$2,918,852 as of 10/06/2023 10:11 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:26 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	increased cost for diving contractor to remove piping below deck and delay in electrical materials delivery; increased cost for diving contractor to remove piping below deck and delay in electrical materials delivery.; a new contractor was selected to remove the inlet piping that specializes in safely completing work on open water. New steel pipe was installed on the inlet overhead rack and was not installed below deck; Updated to reflect specialized diving contractor to remove piping below deck and for steel pipe installed in inlet rack; Updated to reflect accurate pricing for intake piping removal underneath the concrete slab.; The purpose of this project is to remove the current piping underneath the intake system and replace and move piping to above the intake structure to improve access and safety for future repairs.		
Capital Justification	External Corrosion has compromised the integrity of the piping systems that support the coarse and traveling screens on the plant circulating water system. The piping is currently located below the intake structure's slab elevation.		
Project Justification Category	Reliability	**Units of Property**	Piping
Start Date	11/1/2020	**Functional Location**	SM-99-M
End Date	7/31/2023	**Planned In-Service Date**	7/31/2023
Multi-Year AFE	Yes	**Company Code**	0001
Term of Commitment	4 year	**Type of Spending**	Capital
Project Manager	Leslie Crissup		
Proj Manager Alt.	Kaitlin Radford		

Financials

Capital Information

Capital Project Definition	G:00385
Capital WBS	Capital WBS not specified
Capital PM Order/NWA	615043

Capital Cost

Material or Salvage - Install	$725,000	**Material or Salvage - Remove**	$75,000
Internal Labor - Install	$125,000	**Internal Labor - Remove**	$125,000
Contract Labor - Svcs Install	$775,000	**Contract Labor - Svcs Remove**	$750,000

Other (Misc+Overhead) Install	$100,000	**Other (Misc+Overhead) Remove**	$100,000
Total	$1,725,000	**Total**	$1,050,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$2,775,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	No action would result in further corrosion which may cause the piping to break off from the structure, potentially damaging intake pumps or other equipment.		
List of Related Projects	List of Related Projects not specified		
Alternatives	Alternatives not specified		
Project Sponsor	Scott Lee		
Created By	Kaitlin Radford	**Created On**	Nov 10, 2020
Submitted On	Nov 10, 2020		

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	4/18/2023
Eduardo Escobar	Finance	Approved	4/20/2023
Kelly Casey	Manager	Approved	4/24/2023
Robert Doupe	Director	Approved	4/25/2023
Matthew Schuermann	Officer	Approved	5/2/2023
Charles Walworth	Treasurer	Approved	5/2/2023

Direct Exhibit RD-1

SM03 CAP Exciter Retaining Ring Replacement

Summary Approvals Versions Audit View Related Actions

AFE 7598 - SM03 CAP Exciter Retaining Ring Replacement

Project Information

Project Information

Project Name	SM03 CAP Exciter Retaining Ring Replacement	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	3
AFE Status	Approved		
SAP Actuals	$1,620,762 as of 10/06/2023 10:10 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:24 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose

REV 1 - 1/10/23
Updated completion and in service dates to reflect Fall 2022 Outage
Increased AFE an additional $428,000 with $181,000 remaining to spend for 2023
Increase in cost is due to several unknown discovery items including:
Allterex Re-grout
Allterex Bearing Repairs
Allterex Journal Honing
Allterex Bearing Cap Open Closing for installation of new transmitters ;

The purpose of this project is to replace the 18-5 exciter retaining rings with 18-18 alloy per GE TIL 1001. In addition the following scope will occur during the retaining ring replacement: TIL 1292, field rewind for exciter rotor with new copper, and new field insulation.
The SM03 Alterrex exciter has 18-5 Mn-Cr type retaining rings that are particularly susceptible to a phenomena of Stress Corrosion Cracking (SCC) which could lead to catastrophic damage to the machine and anything in the direct vicinity of it. A new set of 18-18 Mn-Cr stainless steel type retaining ring has been purchased as part of a reliability and safety conscience initiative to eliminate the SCC failure mechanism across the OGE fleet, including the 18-5 type retaining rings installed on SM03 generator.

Additionally, recent rings-off inspections of other Alterrex exciters in the OGE fleet (SO01 & 02 sister Alterrex exciters) have revealed poor condition and failure mechanisms (including shorted turns and failing brazed joints) in the original copper windings. Based on operating profile, age of the windings (47 years), and the recent as-found condition of identical units, it is very likely that the SM03 windings are in poor condition and will require replacement. If the Alterrex is shipped to a vendor's shop to replace the retaining rings, the exciter will be disassembled to a point where a rewind would be convenient and opportune.

If a rewind is not planned and the rings off inspection confirms suspicions regarding the winding condition, OGE will be forced into an impromptu exciter rotor rewind, which will add a large unbudgeted cost and delay the outage by 4-18 weeks. This scenario would also require OGE to decide between using the existing copper windings to rewind the rotor or procuring and installing new copper. Using the old copper would save lead time and would only delay the outage by 4-6 weeks, but would carry greater risk of future failure due to copper fatigue. New copper would take 10-12 weeks to procure and another 4-6 weeks to install, but eliminate future risk of winding failure. This situation and cost/risk/lead time analysis can be avoided by procuring a rewind kit ahead of the outage and planning to rewind the exciter rotor.

As submitted, this project will send the Alterrex assembly to a vendor's shop to perform a retaining ring replacement and rewind of the exciter rotor with new copper, among other activities to refurbish, increase reliability, and extend the life of the Alterrex 20+ years. This project is consistent with decision making around the SM03 turbine and generator projects.

REV 1 - 1/10/23
Updated completion and in service dates to reflect Fall 2022 Outage
Increased AFE an additional $428,000 with $181,000 remaining to spend for 2023
Increase in cost is due to several unknown discovery items including:
Allterex Re-grout
Allterex Bearing Repairs
Allterex Journal Honing
Allterex Bearing Cap Open Closing for installation of new transmitters

Capital Justification This project is considered capital due to the associated work involved in installing new designed (material change) retaining rings per TIL 1001. The field rewind is also considered capital due to the purchase and installation of brand new copper windings.

Project Justification Category	Safety	**Units of Property**	1
Start Date	4/26/2021	**Functional Location**	SM-03-TL
End Date	3/31/2023	**Planned In-Service Date**	1/30/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	3 year	**Type of Spending**	Capital

Project Manager Robbie Gildenblatt

Financials

Capital Information

Capital Project Definition G:02484

Capital WBS

Capital PM Order/NWA G:02484

Capital Cost

Material or Salvage - Install	$528,000	**Material or Salvage - Remove**	$0
Internal Labor - Install	$50,000	**Internal Labor - Remove**	$0
Contract Labor - Svcs Install	$1,050,000	**Contract Labor - Svcs Remove**	$0
Other (Misc+Overhead) Install	$100,000	**Other (Misc+Overhead) Remove**	$0
Total	$1,728,000	**Total**	$0

Total Summary

Third Party Reimbursements $0

Partner Reimbursements $0

Total (Net) $1,728,000

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk The retaining rings require replacing due to potential safety and reliability concern. There could be catastrophic failure in service if retaining rings are not upgraded. A mechanical failure of the retaining rings would result in catastrophic failure of the generator and member life safety.

List of Related Projects G:00909
G:01075

Alternatives Alternatives such as O&M inspections throughout the remainder of the units life.

Project Sponsor Thomas Kordsiemon

Created By Robbie Gildenblatt

Created On May 15, 2021

Submitted On May 15, 2021

Approvers

Approver	Level	Decision	On
Joseph Chancellor	Finance	Approved	1/12/2023
Kelly Casey	Manager	Approved	1/12/2023
Robert Doupe	Director	Approved	1/13/2023
Matthew Schuermann	Officer	Approved	2/2/2023
Charles Walworth	Treasurer	Approved	2/2/2023

Direct Exhibit RD-1

Direct Exhibit RD-1

SM99-CAP River Well Upgrade

Summary Approvals Versions Audit View Related Actions

AFE 7638 - SM99-CAP River Well Upgrade

Project Information

Project Information

Project Name	SM99-CAP River Well Upgrade	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	99
AFE Status	Approved		
SAP Actuals	$1,331,051 as of 10/06/2023 10:10 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:24 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Additional wells were added to the project. We were able to rehabilitate more wells than initially expected. Well field head requirement was raised from initial design to facilitate more efficient transfer of water to settling basins. ; The "River Wells" at Seminole Power Plant supplement make-up water to Lake Konawa when the South Canadian River cannot provide an adequate supply of water to the "River Pumps." This occurs most often during the summer months when lake water levels drop due to evaporation. Many of the River Well Pumps have failed in service and are in need of replacement due to wear and vandalism. The existing pumps and motors are obsolete and cannot be replicated, requiring new/different pumps and motors. OGE's project intent is to return as many wells to service as possible, providing for more reliable and dependable operation of the Seminole Generating Facility.		
Capital Justification	Motor and Pump upgrade is required for this project. This project will also require full upgrade of wiring, control panels and junction boxes. This a retirement unit of property and an upgrade to submersible technology where feasible.		
Project Justification Category	Reliability	**Units of Property**	Motor, Pump
Start Date	7/12/2021	**Functional Location**	SM-99-KI
End Date	12/31/2023	**Planned In-Service Date**	12/31/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	3 year	**Type of Spending**	Capital
Project Manager	Michael Dowell		
Proj Manager Alt.	Kelly Casey		

Financials

Capital Information

Capital Project Definition	G:02084
Capital WBS	
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$509,685	**Material or Salvage - Remove**	$0
Internal Labor - Install	$98,149	**Internal Labor - Remove**	$19,275
Contract Labor - Svcs Install	$571,565	**Contract Labor - Svcs Remove**	$134,000

Other (Misc+Overhead) Install	$44,550	**Other (Misc+Overhead) Remove**	$31,950
Total	$1,223,949	**Total**	$185,225

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$1,409,174
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	Currently only 1 of the 13 pumps in the well field are operational. These pumps provide supplemental water supply to the river pumps when the river runs low during the summer months. If these pumps are not operating properly, the result can be inadequate lake make up to counter evaporation which could potentially create Unit unavailability in extreme conditions.		
List of Related Projects	none.		
Alternatives	do nothing, which could increase the chances of unit unavailability.		
Project Sponsor	Scott Lee		
Created By	Jeremy Townley	**Created On**	May 23, 2021
Submitted On	Jul 13, 2021		

Approvers

Approver	Level	Decision	On
Eduardo Escobar	Finance	Approved	1/24/2023
Kelly Casey	Manager	Approved	1/24/2023
Robert Doupe	Director	Approved	2/1/2023
Matthew Schuermann	Officer	Approved	2/2/2023
Charles Walworth	Treasurer	Approved	2/2/2023

Direct Exhibit RD-1

RV99-CAP Water Treatment Upgrade

Summary Approvals Versions Audit View Related Actions

AFE 7679 - RV99-CAP Water Treatment Upgrade

Project Information

Project Information

Project Name	RV99-CAP Water Treatment Upgrade	**Plant**	River Valley
Business Unit	Power Supply	**Unit**	99
AFE Status	In Progress		
SAP Actuals	$4,608,133 as of 10/06/2023 10:09 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:24 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose The purpose of this project is to upgrade the water treatment system at River Valley with a new UF/RO/EDI system to replace the current aging and failed water treatment equipment.
The current water treatment system contains aging and failed equipment. The PLC HMI failed years ago and has not been effectively usable since OGE took ownership of the plant. This creates a significant workload on operations and requires overtime to manage during heavy demand. The current Demin units are the same age as the plant (30 years) and are need of replacement.
Version 2:
1. Original version was submitted prior to identifying full project cost due to time constraints
2. Delays in major equipment delivery with water treatment contractor resulted in additional cost for plant operation of temporary water treatment rental trailers
3. Original scope did not include demo of existing equipment onsite or temporary water treatment rental trailers
4. Change orders for civil foundation repair and recoat for corrosive areas identified in discovery
5. Change in scope for controls upgrade and material upgrade to stainless steel;

The purpose of this project is to upgrade the water treatment system at River Valley with a new UF/RO/EDI system to replace the current aging and failed water treatment equipment.
This project is to replace all the capital assets for the River Valley Water Treatment system.

Version 2:
1. Original version was submitted prior to identifying full project cost due to time constraints
2. Delays in major equipment delivery with water treatment contractor resulted in additional cost for plant operation of temporary water treatment rental trailers
3. Original scope did not include demo of existing equipment onsite or temporary water treatment rental trailers
4. Change orders for civil foundation repair and recoat for corrosive areas identified in discovery
5. Change orders for controls upgrade and material upgrade to stainless steel;

Version 3:
1. Delays in start up and commission with water treatment contractor construction crew resulted in additional cost for plant operation of temporary water treatment rental trailers

2. Demolition of the neutralization line for water treatment and decommissioned civil pedestals

3. Added heat trace from demolished line outside for freeze protection

4. Start up and commissioning additional time resulted in an increase in internal labor, AFUDC, and overhead expenses

Capital Justification This project is to replace all the capital assets for the River Valley Water Treatment system.

Project Justification Category Reliability

Start Date 6/1/2021

End Date 12/29/2023

Multi-Year AFE Yes

Term of Commitment 3 year

Units of Property Water Purification System

Functional Location RV-99-KJ

Planned In-Service Date 6/16/2023

Company Code 0001

Type of Spending Capital

Project Manager Leslie Crissup

Proj Manager Alt. Kelly Casey

Financials

Capital Information

Capital Project Definition G:02032

Capital WBS

Capital PM Order/NWA 9589937

Capital Cost

Material or Salvage - Install	$1,450,000	**Material or Salvage - Remove**	$0
Internal Labor - Install	$430,000	**Internal Labor - Remove**	$100,000
Contract Labor - Svcs Install	$2,110,000	**Contract Labor - Svcs Remove**	$590,000
Other (Misc+Overhead) Install	$360,000	**Other (Misc+Overhead) Remove**	$60,000
Total	$4,350,000	**Total**	$750,000

Total $4,550,000 Total $750,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$5,100,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	If no action is taken, the PLC will remain unusable and require a significant workload on operations that requires overtime to manage during heavy demand. The current water treatment equipment will continue to age, requiring increased maintenance costs. The PLC HMI failed years ago and has not been effectively usable since OGE took ownership of the plant.
List of Related Projects	G:00565 - MK99 Water Treatment Upgrades G:00067 - SO99 Water Treatment Upgrades
Alternatives	Option 1 - Do Nothing. Continue to run PLC as is. Option 2 – Replace PLC with modern PLC. Partially automate the plant Option 3 – Replace PLC with modern PLC. Add additional instrumentation to fully automate the plant
Project Sponsor	Timothy Chancellor
Created By	Kaitlin Radford
Created On	Jun 13, 2021
Submitted On	Jun 22, 2021

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	9/28/2023
Stacy Randall	Finance	-	-
Kelly Casey	Manager	-	-
Robert Doupe	Director	-	-
Matthew Schuermann	Officer	-	-
Charles Walworth	Treasurer	-	-
Donnie Jones	VP Utility Officer	-	-
William Buckler	CFO	-	-

Direct Exhibit RD-1

MK05-CAP Cooling Tower MCC Replacement

Summary | Approvals | Versions | Audit View | Related Actions

AFE 7716 - MK05-CAP Cooling Tower MCC Replacement

Project Information

Project Information

Project Name	MK05-CAP Cooling Tower MCC Replacement	**Plant**	Muskogee
Business Unit	Power Supply	**Unit**	5
AFE Status	Approved		
SAP Actuals	$1,148,415 as of 10/06/2023 10:09 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:24 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose Version 2:
Discovery work identified additional damage to the switchgear feed from the transformer. The feed cables were starting to break down due to the environment the switchgear operates in. To address this, we moved the switchgear feed to the bottom of the new gear. This required additional Engineering, labor and material.

A generator was required to power the essential systems typically powered by the switchgear due to the extended down time.

Project was delayed due to supply chain issues. This delay caused materials to increase in price. The delay pushed the install window out as well and resulted in extended storage of the equipment before installation.

Unit 5 Cooling Tower MCC is being replaced due to the feeder breaker bus stabs not adequately connecting to the vertical bus bars.

Capital Justification The inadequate breaker stab-bus connections have caused arcing within the Unit 5 Cooling Tower MCC. The MCC is also old and obtaining replacement parts is difficult and costly.

MCC is a capitalized unit of property.

Switchgear was upgraded to an ARC-Resistant Switchgear

Project Justification Category	Reliability	**Units of Property**	Cooling Tower Electric
Start Date	6/1/2021	**Functional Location**	MK-05-EA
End Date	6/21/2023	**Planned In-Service Date**	6/21/2023
Multi-Year AFE	Yes	**Company Code**	0001
Term of Commitment	3 year	**Type of Spending**	Capital

Project Manager Michael Dowell

Proj Manager Alt. Jonathan Caudle

Financials

Capital Information

Capital Project Definition G:01709

Capital WBS

Capital PM Order/NWA 9619346

Capital Cost

Material or Salvage - Install	$304,000	**Material or Salvage - Remove**	$104,000
Internal Labor - Install	$115,000	**Internal Labor - Remove**	$50,000
Contract Labor - Svcs Install	$276,000	**Contract Labor - Svcs Remove**	$75,000
Other (Misc+Overhead) Install	$150,000	**Other (Misc+Overhead) Remove**	$100,000
Total	$845,000	**Total**	$329,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$1,174,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	Equipment failure leading to unplanned outages, O&M costs for repairing equipment.
List of Related Projects	G:01708 - MK04 CAP Cooling Tower MCC Replacement
Alternatives	Do Nothing - If nothing is done the equipment can be expected to fail in service resulting in unplanned outages and unexpected repair costs.
Project Sponsor	Carol Rollins
Created By	Kaitlin Radford
Created On	Jul 4, 2021
Submitted On	Jul 15, 2021

Approvers

Approver	Level	Decision	On
Stacy Randall	Finance	Approved	6/6/2023
Kelly Casey	Manager	Approved	6/12/2023
Robert Doupe	Director	Approved	6/26/2023
Matthew Schuermann	Officer	Approved	7/24/2023
Charles Walworth	Treasurer	Approved	7/24/2023

Direct Exhibit RD-1

SM03-CAP REPLACE REHEATER

Summary Approvals Versions Audit View Related Actions

AFE 7789 - SM03-CAP REPLACE REHEATER

Project Information

Project Information

Project Name	SM03-CAP REPLACE REHEATER	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	3
AFE Status	Approved		
SAP Actuals	$12,858,680 as of 10/06/2023 10:09 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:15 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose Replace Seminole Unit 3 boiler Re-heater, Secondary Superheat, and Primary Superheat Outlet tube bundle assemblies. Components are original equipment (1975) and are beyond end-of-life per Mechanical Integrity standards. This project provides greater unit reliability and availability by a reduction in unplanned outages due to tube leaks.
Version 2:
Mechanical Demo & Install Cost under estimated- Lowest Bid was 25% above OGE Estimate.
Mechanical Demo & Install Change Orders From Original Scope.
Discovery- Replaced all Thermocouples in PSHO, SH, and RH Vestibules.
Discovery- Vestibule Steam Piping Seals Inspected/Replaced.
Infrastructure Improvements - Laydown yard 70'x400' Engineered/Constructed.
Internal Labor cost over original estimate.
Misc & Overhead cost over original estimate.
;

Capital Justification Cost.
Upgrade in component material to Stainless Steel.
Increased reliability and availability.
Reduction in unplanned outage- emergency maintenance O&M cost.

Project Justification Category	Reliability-Mechanical Integrity	**Units of Property**	Boiler
Start Date	7/1/2021	**Functional Location**	SM-03-AE-BLR
End Date	6/10/2023	**Planned In-Service Date**	6/10/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	3 year	**Type of Spending**	Capital
Project Manager	Chance Wade		
Proj Manager Alt.	Robbie Gildenblatt		

Financials

Capital Information

Capital Project Definition	G:02087
Capital WBS	
Capital PM Order/NWA	9616280 9620273

Capital Cost

Material or Salvage - Install	$4,476,556	**Material or Salvage - Remove**	$0

Internal Labor - Install	$321,426	**Internal Labor - Remove**	$321,426
Contract Labor - Svcs Install	$5,125,296	**Contract Labor - Svcs Remove**	$2,182,303
Other (Misc+Overhead) Install	$259,721	**Other (Misc+Overhead) Remove**	$259,721
Total	$10,182,999	**Total**	$2,763,450

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$12,946,449
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Decrease in Availability and Reliability.
Increased frequency of unplanned outages.
Unplanned outage environments elevate the risk of incident's and injury's.
Continued performance degradation.
Maintenance – Increasing O&M expenses.

List of Related Projects List of Related Projects not specified

Alternatives Targeted Repair:
Restore operational dependability by reactively repairing only when and where tube leaks occur.
RISK: Does not fully capture/restore operational performance and reliability of the boiler. This option also increases potential O&M costs.

Replacing each component individually:
Option 1: replace reheat
Option 2: replace reheat & PSHO
Option 3: replace reheat, PSHO, SSH
RISK: Individual replacement will increase costs > 25%

Project Sponsor Robert Doupe

Created By Chance Wade **Created On** Aug 23, 2021

Submitted On Aug 31, 2021

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	2/28/2023
Eduardo Escobar	Finance	Approved	3/8/2023
Kelly Casey	Manager	Approved	3/16/2023
Robert Doupe	Director	Approved	3/27/2023
Matthew Schuermann	Officer	Approved	5/2/2023
Charles Walworth	Treasurer	Approved	5/10/2023
Donnie Jones	VP Utility Officer	Approved	5/10/2023
William Buckler	CFO	Approved	5/30/2023
Sean Trauschke	CEO	Approved	-

Direct Exhibit RD-1

SM99-CAP Tainter Gate Replacement

Summary Approvals Versions Audit View Related Actions

AFE 7818 - SM99-CAP Tainter Gate Replacement

Project Information

Project Information

Project Name	SM99-CAP Tainter Gate Replacement	**Plant**	Seminole
Business Unit	Power Supply	**Unit**	99
AFE Status	Approved		
SAP Actuals	$0 as of 10/31/2021 11:00 AM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:14 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	The dam at Konawa Lake is equipped with a tainter gate on the spillway to control lake level during high rainfall events. The tainter gate is currently inoperable leaving the emergency spillway as the only means to discharge excess water during these events. This project intends to replace components of the tainter gate to get operational.		
Capital Justification	Discharge through the emergency spillway causes damage to the county road behind the dam. A dam inspection conducted by Guernsey Engineering in 2015 noted that the inoperable tainter gate could be a serious safety issue during flood events. Another inspection in 2021 shows the gate to be inoperable condition with some significant damage.		
Project Justification Category	Environmental	**Units of Property**	Gate, Tainter
Start Date	8/26/2021	**Functional Location**	SM-99-KE- DAM
End Date	12/30/2022	**Planned In-Service Date**	11/23/2022
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Robbie Gildenblatt		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:00089-SM00.30
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$540,000	**Material or Salvage - Remove**	$200,000
Internal Labor - Install	$421,312	**Internal Labor - Remove**	$0
Contract Labor - Svcs Install	$927,936	**Contract Labor - Svcs Remove**	$438,624
Other (Misc+Overhead) Install	$374,968	**Other (Misc+Overhead) Remove**	$0
Total	$2,264,216	**Total**	$638,624

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$2,902,840

Total AFE Amount after reimbursements

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk The Tainter gate is currently inoperable leaving the emergency spillway as the only means to discharge excess water during these events. Discharge through the emergency spillway causes damage to the county road behind the dam and potential loss of property. There have property developments downstream of the dam which may trigger reclassification of the risk assessment.

List of Related Projects List of Related Projects not specified

Alternatives Alternatives not specified

Project Sponsor Scott Lee

Created By Robbie Gildenblatt

Created On Sep 19, 2021

Submitted On Oct 22, 2021

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	9/28/2021
Jayme Buchanan	Finance	Approved	9/28/2021
Kelly Casey	Manager	Approved	9/30/2021
Robert Doupe	Director	Approved	9/30/2021
Matthew Schuermann	Officer	Approved	9/30/2021
Charles Walworth	Treasurer	Approved	9/30/2021

Direct Exhibit RD-1

Frontier Controls Upgrade

Summary Approvals Versions Audit View Related Actions

AFE 7933 - Frontier Controls Upgrade

Project Information

Project Information

Project Name	Frontier Controls Upgrade	**Plant**	Frontier
Business Unit	Power Supply	**Unit**	1
AFE Status	Approved		
SAP Actuals	$10,220,169 as of 10/06/2023 10:08 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:13 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose As contemplated in the original AFE revision, Control System EPC Contract costs are now known, and sufficient efforts have been focused on developing additional project support costs needed for successful execution of the project. This AFE revision provides these updated known costs.;

The Distributed Control System (DCS) currently in place at Frontier has reached the end of its service life. With parts difficult to source, and OEM support unavailable, it is necessary to replace the DCS with a current age DCS in order to improve system maintainability. The controls system upgrades include the Gas Turbine, Steam Turbine, both Generators, and all balance of plant systems.

Various additional improvements to the facility are included in the scope of this project, including:
-Control Room Upgrades, to accommodate new operator interfaces.
-Automation of existing manual valves, to automate HRSG filling/draining and keep members out of harms way.
-Replacement of Steam and Gas generator excitement systems
-Replacement of Steam and Gas Turbine vibration monitoring systems to bring up to OG&E fleet standard.
-Design and implementation of low flow recirculation systems on HRSG HP and IP economizer sections

At the time of submitting this initial AFE, bid efforts are underway with DCS suppliers for an turnkey contract for the full project scope. As a part of this bid effort, the project team continues to refine project scope, bidder appetite for components of the scope, and overall project costs. This AFE is intended to bridge the gap between current project costs that are approaching the AFE threshold, and final project costs once known. A final AFE is expected to be submitted no later than year's end, once these final costs are known, and full project costs are required to support the execution of the DCS EPC contract.

AFE REVISION 01 - EPC Contract costs are now known, and is included in this AFE revision.

Capital Justification With the existing DCS system at end of service life, control system parts are difficult to procure. In some cases, loss of certain components may put unit at risk of forced outage with no recovery. The installation of a current age DCS provides readily available replacement components and a more resilient system.

Project Justification Category	Reliability	**Units of Property**	DCS Upgrade
Start Date	3/11/2021	**Functional Location**	Functional Location not specified
End Date	12/31/2023	**Planned In-Service Date**	11/27/2022
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	3 year	**Type of Spending**	Capital
Project Manager	Robert Weaver		

Financials

Capital Information

Capital Project Definition G:02076

Capital WBS

Capital PM Order/NWA Capital Order not specified

Capital Cost

Material or Salvage - Install	$6,138,077	**Material or Salvage - Remove**	$323,057
Internal Labor - Install	$1,214,520	**Internal Labor - Remove**	$63,922
Contract Labor - Svcs Install	$808,352	**Contract Labor - Svcs Remove**	$42,545
Other (Misc+Overhead) Install	$2,073,278	**Other (Misc+Overhead) Remove**	$109,120
Total	$10,234,227	**Total**	$538,644

Total Summary

Third Party Reimbursements $0

Partner Reimbursements $0

Total (Net) $10,772,871

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk The risk of not completing this controls upgrade is the inability to source replacement equipment for the end of service life existing DCS, and as a result an inability to operate the unit and maintain reliability.

List of Related Projects N/A

Alternatives There is no viable alternatives to replacing the legacy control system at Frontier. Proposals were secured from multiple vendors for the latest available technology.

Project Sponsor Tony Shook

Created By Robert Weaver

Created On Nov 16, 2021

Submitted On Nov 29, 2021

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	1/19/2022
Joseph Chancellor	Finance	Approved	1/19/2022
Justin Damron	Manager	Approved	1/19/2022
Tony Shook	Director	Approved	1/24/2022
Matthew Schuermann	Officer	Approved	1/24/2022
Charles Walworth	Treasurer	Approved	1/26/2022
Donnie Jones	VP Utility Officer	Approved	1/26/2022
William Buckler	CFO	Approved	1/26/2022
Sean Trauschke	CEO	Approved	2/10/2022

Direct Exhibit RD-1

MC99 - CAP Mark VIe and Overspeed Trip Protection ...

Summary | Approvals | Versions | Audit View | Related Actions

AFE 7993 - MC99 - CAP Mark VIe and Overspeed Trip Protection Upgrade

Project Information

Project Information

Project Name	MC99 - CAP Mark VIe and Overspeed Trip Protection Upgrade	**Plant**	McClain
Business Unit	Power Supply	**Unit**	99
AFE Status	Approved		
SAP Actuals	$1,335,292 as of 06/06/2023 10:09 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:12 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Purpose is to upgrade the existing Mark VI Platform turbine control hardware and software with Mark VIe hardware and software for all 3 Units. Project also includes logic upgrades to overspeed trip testing functionality for all 3 Units.		
Capital Justification	Mark VI Platform is no longer supported and being phased out. In order to have our platform supported and serviceable, migration to VLe is needed which also delivers significant performance enhancements and an improved control system lifecycle. Logic upgrade to overspeed trip testing functionality will upgrade the unit to trip at a lower setpoint during unit overspeed trip testing. This will greatly reduce fatigue to the unit by not actually overspeeding the unit during testing.		
Project Justification Category	Reliability	**Units of Property**	MC 1/2/3 Turbine
Start Date	11/19/2021	**Functional Location**	MC-99-ID
End Date	12/30/2022	**Planned In-Service Date**	11/11/2022
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Robbie Gildenblatt		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03150-MC99.00 G:03150-MC99.70
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$450,000	**Material or Salvage - Remove**	$50,000
Internal Labor - Install	$100,000	**Internal Labor - Remove**	$50,000
Contract Labor - Svcs Install	$1,083,875	**Contract Labor - Svcs Remove**	$100,000
Other (Misc+Overhead) Install	$160,000	**Other (Misc+Overhead) Remove**	$0
Total	$1,793,875	**Total**	$200,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$458,591

Total (Net) $1,535,284

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Mark VI Platform is no longer supported and being phased out. If the system would ever need servicing or troubleshooting in the future, it will be discontinued and no longer serviceable. This would require a forced outage to replace.

List of Related Projects List of Related Projects not specified

Alternatives Alternatives not specified

Project Sponsor Tony Shook

Created By Robbie Gildenblatt

Created On Dec 27, 2021

Submitted On Dec 27, 2021

Approvers

Approver	Level	Decision	On
Joseph Chancellor	Finance	Approved	11/19/2021
Kelly Casey	Manager	Approved	11/19/2021
Robert Doupe	Director	Approved	11/30/2021
Matthew Schuermann	Officer	Approved	12/3/2021
Charles Walworth	Treasurer	Approved	12/8/2021

Direct Exhibit RD-1

MK06-CAP-PULVERIZER IMPROVEMENTS

Summary Approvals Versions Audit View Related Actions

AFE 8060 - MK06-CAP-PULVERIZER IMPROVEMENTS

Project Information

Project Information

Project Name	MK06-CAP-PULVERIZER IMPROVEMENTS	**Plant**	Muskogee
Business Unit	Power Supply	**Unit**	6
AFE Status	Approved		
SAP Actuals	$3,734,851 as of 10/06/2023 10:07 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:11 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Reduce boiler slagging by improving overall boiler combustion efficiency through implementation of six (6) mill modernizations and burner upgrades to the coal feed and pulverization system. The project plan will be to perform work on mills: (B,) (C,) (D,) and (E) in budget year 2022 and mills: (A) and (F) in in budget year 2023.		
Capital Justification	Unit 6 suffers from frequent slagging and must reduce rate every few days to remove slag build-up from the boiler. This project includes all boiler tuning services, testing, and replacement of existing mill components with the following new modernized and upgraded components: rotating vane wheel cast deflectors, journal liners, CE 983 segmented classifier cones, high spin static classifiers, multi-outlet diffusers, CV-style adjustable orifices, and mill bottom hardfacing.		
Project Justification Category	Reliability	**Units of Property**	COAL FEED & PULVERIZATION SYSTEM
Start Date	2/1/2022	**Functional Location**	MK-06-DP-PULV
End Date	6/1/2023	**Planned In-Service Date**	6/1/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Stephen Carter		

Financials

Capital Information

Capital Project Definition	G:01705
Capital WBS	
Capital PM Order/NWA	615950

Capital Cost

Material or Salvage - Install	$882,646	**Material or Salvage - Remove**	$200,000
Internal Labor - Install	$213,344	**Internal Labor - Remove**	$53,336
Contract Labor - Svcs Install	$1,006,533	**Contract Labor - Svcs Remove**	$251,632
Other (Misc+Overhead) Install	$835,806	**Other (Misc+Overhead) Remove**	$208,951
Total	$2,938,329	**Total**	$713,919

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$3,652,248

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Failure to complete this project leads to continued operational problems and high O&M costs for boiler slag management and boiler system damage. Will contribute to unit derates and/or forced outages.

List of Related Projects List of Related Projects not specified

Alternatives Do nothing and continue experiencing unit derates during de-slagging. Add dynamic classifiers at a higher cost.

Project Sponsor Jonathan Stogsdill

Created By Stephen Carter **Created On** Feb 5, 2022

Submitted On Feb 5, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	1/5/2022
Stacy Randall	Finance	Approved	1/19/2022
Kelly Casey	Manager	Approved	1/20/2022
Robert Doupe	Director	Approved	1/26/2022
Matthew Schuermann	Officer	Approved	1/26/2022
Charles Walworth	Treasurer	Approved	1/26/2022

Direct Exhibit RD-1

SO02 -CAP Bottom Ash Transport ELG

Summary Approvals Versions Audit View Related Actions

AFE 8068 - SO02 -CAP Bottom Ash Transport ELG

Project Information

Project Information

Project Name	SO02 -CAP Bottom Ash Transport ELG	**Plant**	Sooner
Business Unit	Power Supply	**Unit**	2
AFE Status	Approved		
SAP Actuals	$15,914,154 as of 10/06/2023 10:07 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:11 PM		

AFE Details

AFE Details

Type of Commitment Project

Description and Purpose The reason for the revisions is Initial AFE was built using 2021 estimated costs. After escalation and receiving actual proposals from vendors, the costs to perform the work was much higher than expected. This resulted in a new version of the AFE using the updated and accurate figures.;

EPA's Effluent Limitation Guidelines (ELG) Rule takes effect Dec 31st, 2025. The rule will limit daily discharge of transport water from Bottom Ash Systems to a 30-day rolling average of 10% of the wetted system volume (excluding any ash process/cooling ponds). Sooner Plant's existing water impounded Bottom Ash System utilizes sluiced transport water as its primary material mover. Sooner's estimated combined Unit's wetted system volume is 1.16 million gallons. Therefore, the new rule will allow a maximum daily discharge from the system of 116 thousand gallons, or an average of 81 GPM. The original design basis for the Sooner's existing system exceeds this amount by up to 275 thousand gallons per day, or an average of 191 GPM. Sooner Plant having a cooling pond within the existing system design/operation makes it difficult to comply with this rule, particularly during high rainfall events which we'd have to manage as additional transport water discharged from the system. Leaving the system as it currently operates is not a viable alternative due to the above mentioned design/operational challenges in meeting rule compliance. Modification of the existing system to comply with the rule also comes at a significant cost, no guarantee around system limitations, continued transport water and pond compliance risk, and continued increased O&M spent on aged and outdated assets. The current system will have to be converted to meet the rule. We are targeting existing planned overhauls in 2023 and 2024 for the new Bottom Ash System installation for Sooner Units #1 and #2 respectively. This will convert Sooner Plant to a Bottom Ash System that is listed by the EPA as a best available technology for dry systems and does not include transport water in its operation.
****
This AFE is being revised from Version - V1 AFE Amount : $13,760,000 to New Version - V2 AFE Amount : $17,891,701 because the project had Over/Under Estimated Costs. The reason for the revisions is Initial AFE was built using 2021 estimated costs. After escalation and receiving actual proposals from vendors, the costs to perform the work was much higher than expected. This resulted in a new version of the AFE using the updated and accurate figures.
Original AFE costs were derived directly from the original FEED study. As a result, a readjustment of the project budget once project costs became known.
*Engineered equipment costs were higher upon contracting.
*Installation costs will be higher.
*Project support costs will be higher
*Contingency to carry through construction will be lower

Capital Justification Sooner's current Bottom Ash System has a combined annual cost to operate and maintain of about $1.0 MM per year based on historical SAP data. Modifying the existing system for compliance would add equipment and complexity, thus continuing to increase the annual operating cost of the current technology. The chosen submerged flight conveyor technology will eliminate 70% of the existing bottom ash equipment majorly reducing the size and complexity of the system. From this it will also reduce the annual cost of operating and maintaining the bottom ash systems by about $ 650-700K per year for the site.
In addition, the current bottom ash transport systems are vulnerable to large precipitation events and storm water runoff. During periods of high rainfall, it would be difficult/impossible to comply with the 10% discharge limit requirement due to having to release transport water from the existing Ash Cooling Pond for level management. It is foreseeable that there will be times due to this limitation when the plant is unable to operate due to high rainwater volumes. The proposed submerged flight conveyor systems are not affected by rainfall and will not place the plant at compliance risk during high rainfall events.
The proposed system also removes the need to have multiple settling/recycle basins and an ash cooling pond within the system's process loop. This presents a major compliance opportunity in converting away from our current Ash Cooling Pond within this project after both Sooner Units are converted. This will remove the need to have any surface or sub surface impoundments within the process loop directly designated as "ash handling".
The proposed submerged flight conveyor system has these additional advantages over the current technology:
- Enhances safety by reducing or eliminating the need to manually clear ash from the bottom hoppers (above the clinker

- Enhances safety by reducing or eliminating the need to manually clear ash from the bottom hoppers (above the clinker grinders)
- Replaces all bottom ash system components from the furnace bottom down. Eliminates all current age and maintenance related issues with the lower furnace seal, ash hoppers, hopper nozzle flush systems, ash sluice gates, clinker grinders, pyrite system, dewatering bins, settling and recycle basins, etc.
- Existing furnace bottom inward overflowing weir seal system is replaced with new wet or dry seal system assembly.
- Robust design that has been in the market with multiple OEM vendors for approximately 35 years.

Project Justification Category	Environmental	**Units of Property**	Boiler Ash removal
Start Date	1/3/2022	**Functional Location**	SO-02-WL
End Date	12/29/2023	**Planned In-Service Date**	12/29/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Matthew Phillips		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:01947-SO02.30
Capital PM Order/NWA	9605419

Capital Cost

Material or Salvage - Install	$3,869,069	**Material or Salvage - Remove**	$564,500
Internal Labor - Install	$802,664	**Internal Labor - Remove**	$100,000
Contract Labor - Svcs Install	$7,640,022	**Contract Labor - Svcs Remove**	$1,000,000
Other (Misc+Overhead) Install	$3,338,823	**Other (Misc+Overhead) Remove**	$576,623
Total	$15,650,578	**Total**	$2,241,123

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$17,891,701
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	The existing wet transport system will be expensive to modify to continue to use. With the concern of storm water co-mingling with the transport water, there is concern that the existing system will be able to comply with the new rule. Given the high cost to modify and maintain, the best information to date indicates that it will be preferable to convert the system to a quench system at Sooner		
List of Related Projects	G:01946 G:01952		
Alternatives	1. Modify the transport system and continue to operate as it currently operates. 2. Upgrade the bottom ash system to a quench water and de-watered system using under hopper conveyors.		
Project Sponsor	Donald Wyckoff		
Created By	Matthew Phillips	**Created On**	Feb 12, 2022
Submitted On	Mar 10, 2022		

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	2/6/2023
Jayme Buchanan	Finance	Approved	2/6/2023
Kelly Casey	Manager	Approved	2/6/2023

Kelly Casey	Manager	Approved	2/6/2023
Robert Doupe	Director	Approved	2/6/2023

Approver	Level	Decision	On
Matthew Schuermann	Officer	Approved	2/7/2023
Charles Walworth	Treasurer	Approved	2/7/2023
Donnie Jones	VP Utility Officer	Approved	2/8/2023
William Buckler	CFO	Approved	2/9/2023
Sean Trauschke	CEO	Approved	2/9/2023

Direct Exhibit RD-1

MK06-CAP PRECIPITATOR ROOF REPLACE

Summary Approvals Versions Audit View Related Actions

AFE 8106 - MK06-CAP PRECIPITATOR ROOF REPLACE

Project Information

Project Information

Project Name	MK06-CAP PRECIPITATOR ROOF REPLACE	**Plant**	Muskogee
Business Unit	Power Supply	**Unit**	6
AFE Status	Approved		
SAP Actuals	$7,981,052 as of 06/06/2023 10:08 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:11 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Restore OEM structural integrity of the precipitator hot and cold roof in fields 1 -3, modify design for CE support beams, and install a sealing method for preventing internal damage from corrosion.		
Capital Justification	Current state of roof requires repairs during every O&M outage. Average cost of precipitator repairs per outage is $0.57M with an expected upward trend increase of 40% in 2022 and 60% by 2025. Roof leaks allow moisture and ambient temperature to enter the internal precipitator which causes corrosion. Tramp air cooling prevents the precipitator from proper operation.		
Project Justification Category	Environmental	**Units of Property**	Precipitator
Start Date	10/3/2022	**Functional Location**	MK-06-GB-PCP
End Date	12/30/2022	**Planned In-Service Date**	11/7/2022
Multi-Year AFE	No	**Company Code**	0100
Term of Commitment	1 year	**Type of Spending**	Capital
Project Manager	Stephen Carter		

Financials

Capital Information

Capital Project Definition	G:03061
Capital WBS	
Capital PM Order/NWA	9624982

Capital Cost

Material or Salvage - Install	$1,773,000	**Material or Salvage - Remove**	$1,182,000
Internal Labor - Install	$344,354	**Internal Labor - Remove**	$38,261
Contract Labor - Svcs Install	$3,082,823	**Contract Labor - Svcs Remove**	$1,321,209
Other (Misc+Overhead) Install	$731,083	**Other (Misc+Overhead) Remove**	$393,660
Total	$5,931,260	**Total**	$2,935,130

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$8,866,390
	Total AFE Amount after reimbursements

Direct Exhibit RD-1

Further Information

Further Information

Statement of Risk Failure to complete this project will result in accelerated corrosion deterioration of the roof and internal components resulting in increased repairs and mitigation.

List of Related Projects List of Related Projects not specified

Alternatives Do nothing resulting in higher repair and future replacement costs. Replace first field only which is worst condition. Repair worst areas with patches to provide temporary fix.

Project Sponsor Jonathan Stogsdill

Created By Stephen Carter **Created On** Feb 15, 2022

Submitted On Jun 21, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	6/10/2022
Stacy Randall	Finance	Approved	6/10/2022
Kelly Casey	Manager	Approved	6/13/2022
Robert Doupe	Director	Approved	6/20/2022
Matthew Schuermann	Officer	Approved	6/21/2022
Charles Walworth	Treasurer	Approved	7/7/2022
Donnie Jones	VP Utility Officer	Approved	7/7/2022
William Buckler	CFO	Approved	5/31/2022

Direct Exhibit RD-1

ME08-CAP REPLACE CT MODULE 8/LP SECTION FIS

Summary Approvals Versions Audit View Related Actions

AFE 8148 - ME08-CAP REPLACE CT MODULE 8/LP SECTION FIS

Project Information

Project Information

Project Name	ME08-CAP REPLACE CT MODULE 8/LP SECTION FIS	**Plant**	Mustang
		Unit	8
Business Unit	Power Supply		
AFE Status	Approved		
SAP Actuals	$3,472,998 as of 09/06/2023 10:07 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:10 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	UPDATE: MODULE IS IN THE SHOP...SIEMENS HAS INFORMED US THAT THE CHARGES FOR MODULE SWAP ONLY WILL BE $3,080,000.00. THERE MAY BE ADDITIONAL CHARGES FOR DISCOVERY WORK. ADDITIONALLY THERE WILL BE CHARGES FOR UNIT DELIVERY AND INSTALLATION ON OGE SITE.; REPLACE FIS CT MODULE 8/LP SECTION. REPLACEMENT DUE TO TAIL BEARING FAILURE. MODULE 8 MUST BE REPLACED TO RETURN CT TO SERVICE. CT WILL BE REMOVED FROM SITE AND HAVE MODULE 8 REPLACED AT SIEMENS REPAIR CENTER. CT WILL THEN BE BROUGHT BACK AND INSTALLED TO RETURN TO SERVICE. THIS AFE WILL INCLUDE ADDITIONAL COST FOR STORAGE AND TRANSPORTATION.		
Capital Justification	UPDATE: MODULE IS IN THE SHOP...SIEMENS HAS INFORMED US THAT THE CHARGES FOR MODULE SWAP ONLY WILL BE $3,080,000.00. THERE MAY BE ADDITIONAL CHARGES FOR DISCOVERY WORK. ADDITIONALLY THERE WILL BE CHARGES FOR UNIT DELIVERY AND INSTALLATION ON OGE SITE. COMPLETE MODULE 8/LP SECTION OF CT WILL BE REPLACED AT SIEMENS REPAIR CENTER. CT WILL BE TESTED AT SIEMENS LOCATION TO VERIFY FUNCTION BEFORE BEING RETURNED TO MUSTANG ENERGY CENTER.		
Project Justification Category	Reliability	**Units of Property**	TURBINE SHAFT, SEGMENT
Start Date	2/4/2022	**Functional Location**	ME-08-RA-FNGR- TRB
End Date	12/30/2022	**Planned In-Service Date**	12/30/2022
Multi-Year AFE	No	**Company Code**	0100
Term of Commitment	1 year	**Type of Spending**	Capital
Project Manager	Tony Shook		
Proj Manager Alt.	William Sanders		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03474-ME08.30
Capital PM Order/NWA	9625053

Capital Cost

Material or Salvage - Install	$1,848,000	**Material or Salvage - Remove**	$20,000
Internal Labor - Install	$100,000	**Internal Labor - Remove**	$20,000
Contract Labor - Svcs Install	$1,432,000	**Contract Labor - Svcs Remove**	$20,000

Other (Misc+Overhead) Install	$0	**Other (Misc+Overhead) Remove**	$0
Total	$3,380,000	**Total**	$60,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$3,440,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	TURBINE IS CURRENTLY FAILED WITH APPROX. 62MW OF CAPACITY IT MUST BE REPAIRED AND RETURNED TO SERVICE.		
List of Related Projects	N/A		
Alternatives	N/A		
Project Sponsor	Tony Shook		
Created By	Timothy Garner	**Created On**	Mar 14, 2022
Submitted On	Mar 19, 2022		

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	3/31/2022
Jayme Buchanan	Finance	Approved	3/31/2022
William Sanders	Manager	Approved	4/1/2022
Tony Shook	Director	Approved	4/1/2022
Matthew Schuermann	Officer	Approved	4/1/2022
Charles Walworth	Treasurer	Approved	4/1/2022

Direct Exhibit RD-1

ME09-CAP REPLACE CT MODULE 8/LP SECTION FIS

Summary Approvals Versions Audit View Related Actions

AFE 8154 - ME09-CAP REPLACE CT MODULE 8/LP SECTION FIS

Project Information

Project Information

Project Name	ME09-CAP REPLACE CT MODULE 8/LP SECTION FIS	**Plant**	Mustang
		Unit	9
Business Unit	Power Supply		
AFE Status	Approved		
SAP Actuals	$3,294,725 as of 05/06/2023 10:05 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:10 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	UPDATE: MODULE IS IN THE SHOP...SIEMENS HAS INFORMED US THAT THE CHARGES FOR MODULE SWAP ONLY WILL BE $3,080,000.00. THERE MAY BE ADDITIONAL CHARGES FOR DISCOVERY WORK. ADDITIONALLY THERE WILL BE CHARGES FOR UNIT DELIVERY AND INSTALLATION ON OGE SITE.; REPLACE FIS CT MODULE 8/LP SECTION. REPLACEMENT DUE TO TAIL BEARING FAILURE. MODULE 8 MUST BE REPLACED TO RETURN CT TO SERVICE. CT WILL BE REMOVED FROM SITE AND HAVE MODULE 8 REPLACED AT SIEMENS REPAIR CENTER. CT WILL THEN BE BROUGHT BACK AND INSTALLED TO RETURN TO SERVICE. THIS AFE WILL INCLUDE ADDITIONAL COST FOR STORAGE AND TRANSPORTATION.		
Capital Justification	UPDATE: MODULE IS IN THE SHOP...SIEMENS HAS INFORMED US THAT THE CHARGES FOR MODULE SWAP ONLY WILL BE $3,080,000.00. THERE MAY BE ADDITIONAL CHARGES FOR DISCOVERY WORK. ADDITIONALLY THERE WILL BE CHARGES FOR UNIT DELIVERY AND INSTALLATION ON OGE SITE. COMPLETE MODULE 8/LP SECTION OF CT WILL BE REPLACED AT SIEMENS REPAIR CENTER. CT WILL BE TESTED AT SIEMENS LOCATION TO VERIFY FUNCTION BEFORE BEING RETURNED TO MUSTANG ENERGY CENTER.		
Project Justification Category	Reliability	**Units of Property**	TURBINE SHAFT, SEGMENT
Start Date	2/11/2022	**Functional Location**	ME-09-RA-FNGR- TRB
End Date	12/30/2022	**Planned In-Service Date**	12/30/2022
Multi-Year AFE	No	**Company Code**	0100
Term of Commitment	1 year	**Type of Spending**	Capital
Project Manager	Tony Shook		
Proj Manager Alt.	William Sanders		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03475-ME09.30
Capital PM Order/NWA	9625577

Capital Cost

Material or Salvage - Install	$1,848,000	**Material or Salvage - Remove**	$20,000
Internal Labor - Install	$100,000	**Internal Labor - Remove**	$20,000
Contract Labor - Svcs Install	$1,432,000	**Contract Labor - Svcs Remove**	$20,000

Other (Misc+Overhead) Install	$0	**Other (Misc+Overhead) Remove**	$0
Total	$3,380,000	**Total**	$60,000

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$3,440,000
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	TURBINE IS CURRENTLY FAILED WITH APPROX. 62MW OF CAPACITY IT MUST BE REPAIRED AND RETURNED TO SERVICE.		
List of Related Projects	N/A		
Alternatives	N/A		
Project Sponsor	Tony Shook		
Created By	Timothy Garner	**Created On**	Mar 19, 2022
Submitted On	Mar 19, 2022		

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	3/31/2022
Jayme Buchanan	Finance	Approved	3/31/2022
William Sanders	Manager	Approved	3/31/2022
Tony Shook	Director	Approved	4/1/2022
Matthew Schuermann	Officer	Approved	4/1/2022
Charles Walworth	Treasurer	Approved	4/1/2022

Direct Exhibit RD-1

MK05-CAP Generator Bushing Replacement

Summary Approvals Versions Audit View Related Actions

AFE 8429 - MK05-CAP Generator Bushing Replacement

Project Information

Project Information

Project Name	MK05-CAP Generator Bushing Replacement	**Plant**	Muskogee
Business Unit	Power Supply	**Unit**	5
AFE Status	In Progress		
SAP Actuals	$1,432,374 as of 10/06/2023 10:04 PM	**SAP Service Status**	REL
SAP Service Update	11/05/2023 01:07 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	In 2022, an inspection of the generator lead box revealed significant greasing of the porcelain of 4 of the 6 bushings (HVB). Additionally, there are signs of gasket breakdown which allows H2 and oil to leak from the generator lead box. 2 new HVB were ordered and will be installed during the 2022 spring outage to correct the worst gasket and HVB. Failure of the bushings or the bushing support systems can result in an equipment electrical fault and major damage to the machine. This project would purchase and install 4 new bushings for the generator and refurbish the old bushings for spare. This work would also include electrical testing and certification of the new bushings and stator windings which is related to MI 3.08. Ver 2. The additions of discovery work identified once rotor was disassembled in shop. Additional time was needed for repairs.		
Capital Justification	Failure of the bushings or the bushing support systems will result in an equipment electrical fault and major damage to the machine. Additionally, gaskets meant to keep the machine H2 tight have recently deteriorated and failed (replace 2 of 6 worst ones in 2022). This is expected to fail in the near future.		
Project Justification Category	Reliability	**Units of Property**	GENERARTOR
Start Date	12/5/2022	**Functional Location**	MK-05-TB- INS-1
End Date	6/1/2023	**Planned In-Service Date**	6/1/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Kathleen Alba		
Proj Manager Alt.	Kelly Casey		

Financials

Capital Information

Capital Project Definition	G:03810
Capital WBS	
Capital PM Order/NWA	9631906

Capital Cost

Material or Salvage - Install	$254,258	**Material or Salvage - Remove**	$64,564
Internal Labor - Install	$110,000	**Internal Labor - Remove**	$45,000
Contract Labor - Svcs Install	$478,836	**Contract Labor - Svcs Remove**	$296,844

Other (Misc+Overhead) Install	$99,231	**Other (Misc+Overhead) Remove**	$0
Total	$942,325	**Total**	$406,408

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$1,348,733
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	Failure of the bushings or the bushing support systems will result in an equipment electrical fault and major damage to the machine. Additionally, gaskets meant to keep the machine H2 tight have recently deteriorated and failed (replace 2 of 6 worst ones in 2022). This is expected to fail in the near future
List of Related Projects	7941 - MK05-O&M Generator Major Outage
Alternatives	The condition of the bushings can be monitored during inspection of the generator leadbox and the bushings can be replaced at another time. Additionally, this project can be changed to only replace 3 bushings currently demonstrating failure (T4, T5, & T6) and thus save overall costs. With this strategy, only T1 HVB and gasket would remain as original in vintage. This bushing wouled need to by monitored frequently.
Project Sponsor	Jonathan Stogsdill
Created By	Kathleen Alba
Created On	Jul 21, 2022
Submitted On	Aug 4, 2022

Approvers

Approver	Level	Decision	On
Stacy Randall	Finance	Approved	9/6/2023
Kelly Casey	Manager	Approved	9/6/2023
Robert Doupe	Director	Approved	9/14/2023
Matthew Schuermann	Officer	-	-
Charles Walworth	Treasurer	-	-

Direct Exhibit RD-1

ME10-CAP REPLACE CT MODULE 8/LP SECTION FIS

Summary Approvals Versions Audit View Related Actions

AFE 8443 - ME10-CAP REPLACE CT MODULE 8/LP SECTION FIS

Project Information

Project Information

Project Name	ME10-CAP REPLACE CT MODULE 8/LP SECTION FIS	**Plant**	Mustang
		Unit	10
Business Unit	Power Supply		
AFE Status	Approved		
SAP Actuals	$3,297,769 as of 10/06/2023 10:04 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:06 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	REPLACE FIS CT MODULE 8/LP SECTION. REPLACEMENT DUE TO TAIL BEARING FAILURE. MODULE 8 MUST BE REPLACED TO RETURN CT TO SERVICE. CT WILL BE REMOVED FROM SITE AND HAVE MODULE 8 REPLACED AT SIEMENS REPAIR CENTER. CT WILL THEN BE BROUGHT BACK AND INSTALLED TO RETURN TO SERVICE. THIS AFE WILL INCLUDE ADDITIONAL COST FOR STORAGE AND TRANSPORTATION.		
Capital Justification	COMPLETE MODULE 8/LP SECTION OF CT WILL BE REPLACED AT SIEMENS REPAIR CENTER. CT WILL BE TESTED AT SIEMENS LOCATION TO VERIFY FUNCTION BEFORE BEING RETURNED TO MUSTANG ENERGY CENTER.		
Project Justification Category	Reliability	**Units of Property**	TURBINE SHAFT, SEGMENT
Start Date	7/23/2022	**Functional Location**	ME-10-RA-FNGR- TRB
End Date	6/1/2023	**Planned In-Service Date**	6/1/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Paul Schoelen		
Proj Manager Alt.	William Sanders		

Financials

Capital Information

Capital Project Definition

Capital WBS G:03919-ME10.30

Capital PM Order/NWA Capital Order not specified

Capital Cost

Material or Salvage - Install	$1,848,000	**Material or Salvage - Remove**	$20,000
Internal Labor - Install	$100,000	**Internal Labor - Remove**	$20,000
Contract Labor - Svcs Install	$1,432,000	**Contract Labor - Svcs Remove**	$20,000
Other (Misc+Overhead) Install	$0	**Other (Misc+Overhead) Remove**	$0
Total	$3,380,000	**Total**	$60,000

Total Summary

Third Party Reimbursements $0

Partner Reimbursements $0

Total (Net) $3,440,000

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk TURBINE IS CURRENTLY FAILED WITH APPROX. 62MW OF CAPACITY IT MUST BE REPAIRED AND RETURNED TO SERVICE.

List of Related Projects List of Related Projects not specified

Alternatives Alternatives not specified

Project Sponsor Paul Schoelen

Created By Timothy Garner

Created On Aug 3, 2022

Submitted On Aug 3, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	8/16/2022
Jayme Buchanan	Finance	Approved	8/16/2022
William Sanders	Manager	Approved	8/16/2022
Paul Schoelen	Director	Approved	8/16/2022
Matthew Schuermann	Officer	Approved	8/24/2022
Charles Walworth	Treasurer	Approved	8/24/2022

Direct Exhibit RD-1

FR01-CAP Combustion Hardware Upgrade

Summary Approvals Versions Audit View Related Actions

AFE 8466 - FR01-CAP Combustion Hardware Upgrade

Project Information

Project Information

Project Name	FR01-CAP Combustion Hardware Upgrade	**Plant**	Frontier
Business Unit	Power Click to Hide/Unhide buttons	**Unit**	1
AFE Status	Approved		
SAP Actuals	$2,493,219 as of 10/06/2023 10:04 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:06 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Project to replace 8k Combustion Hardware with upgraded 32k for GT.		
Capital Justification	Current hardware has reached end of service life based on OEM guidelines and must be replaced. Upgraded hardware will allow for decreased maintenance intervals and NPV reflects better investment over life of equipment.		
Project Justification Category	Reliability	**Units of Property**	Turbine Hardware - CAP Spares
Start Date	7/31/2022	**Functional Location**	FR-01-RA
End Date	7/1/2023	**Planned In-Service Date**	4/30/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Justin Damron		
Proj Manager Alt.	Paul Schoelen		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03859-FR01.30
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$2,009,780	**Material or Salvage - Remove**	$0
Internal Labor - Install	$0	**Internal Labor - Remove**	$0
Contract Labor - Svcs Install	$350,859	**Contract Labor - Svcs Remove**	$0
Other (Misc+Overhead) Install	$0	**Other (Misc+Overhead) Remove**	$0
Total	$2,360,639	**Total**	$0

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$2,360,639
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Current hardware is at end of life. Failure to procure/replace this hardware could place Frontier in extended forced outage situation being unable to meet market commitments and decrease OGE capacity requirements.

List of Related Projects List of Related Projects not specified

Alternatives Replace hardware with non-upgraded equipment and continue current maintenance intervals.

Project Sponsor Paul Schoelen

Created By Justin Damron **Created On** Aug 6, 2022

Submitted On Aug 6, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	8/2/2022
Jayme Buchanan	Finance	Approved	8/3/2022
Paul Schoelen	Manager	Approved	8/3/2022
Tony Shook	Director	Approved	8/3/2022
Matthew Schuermann	Officer	Approved	8/8/2022
Charles Walworth	Treasurer	Approved	8/8/2022

Direct Exhibit RD-1

ME06-CAP REPLACE CT MODULE 8/LP SECTION FIS

Summary Approvals Versions Audit View Related Actions

AFE 8518 - ME06-CAP REPLACE CT MODULE 8/LP SECTION FIS

Project Information

Project Information

Project Name	ME06-CAP REPLACE CT MODULE 8/LP SECTION FIS	**Plant**	Mustang
Business Unit	Power Supply	**Unit**	6
AFE Status	Approved		
SAP Actuals	$4,211,377 as of 10/06/2023 10:03 PM	**SAP Service Status**	TECO // USFL
SAP Service Update	11/05/2023 01:05 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	Discovery work was found while at the repair depot. Resulted in replacing an additional bearing.; REPLACE FIS CT MODULE 8/LP SECTION. REPLACEMENT DUE TO TAIL BEARING FAILURE. MODULE 8 MUST BE REPLACED TO RETURN CT TO SERVICE. CT WILL BE REMOVED FROM SITE AND HAVE MODULE 8 REPLACED AT SIEMENS REPAIR CENTER. CT WILL THEN BE BROUGHT BACK AND INSTALLED TO RETURN TO SERVICE. THIS AFE WILL INCLUDE ADDITIONAL COST FOR STORAGE AND TRANSPORTATION.		
Capital Justification	COMPLETE MODULE 8/LP SECTION OF CT WILL BE REPLACED AT SIEMENS REPAIR CENTER. CT WILL BE TESTED AT SIEMENS LOCATION TO VERIFY FUNCTION BEFORE BEING RETURNED TO MUSTANG ENERGY CENTER.		
Project Justification Category	Reliability	**Units of Property**	TURBINE SHAFT, SEGMENT
Start Date	8/2/2022	**Functional Location**	ME-06-RA-FNGR- TRB
End Date	10/6/2023	**Planned In-Service Date**	10/6/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Paul Schoelen		
Proj Manager Alt.	William Sanders		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03918-ME06.30
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$2,655,591	**Material or Salvage - Remove**	$20,000
Internal Labor - Install	$100,000	**Internal Labor - Remove**	$20,000
Contract Labor - Svcs Install	$1,810,225	**Contract Labor - Svcs Remove**	$20,000
Other (Misc+Overhead) Install	$0	**Other (Misc+Overhead) Remove**	$0
Total	$4,565,816	**Total**	$60,000

Total Summary

Third Party Reimbursements $0

Partner Reimbursements $0

Total (Net) $4,625,816

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk TURBINE IS CURRENTLY FAILED WITH APPROX. 62MW OF CAPACITY IT MUST BE REPAIRED AND RETURNED TO SERVICE.

List of Related Projects List of Related Projects not specified

Alternatives Alternatives not specified

Project Sponsor Paul Schoelen

Created By Timothy Garner

Created On Aug 10, 2022

Submitted On Aug 10, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	10/25/2023
Jayme Buchanan	Finance	Approved	10/25/2023
William Sanders	Manager	Approved	10/26/2023
Paul Schoelen	Director	Approved	10/26/2023
Matthew Schuermann	Officer	Approved	11/3/2023
Charles Walworth	Treasurer	Approved	11/3/2023

Direct Exhibit RD-1

MK05-CAP AGB REPLACEMENT

Summary Approvals Versions Audit View Related Actions

AFE 8622 - MK05-CAP AGB REPLACEMENT

Project Information

Project Information

Project Name	MK05-CAP AGB REPLACEMENT	**Plant**	Muskogee
Business Unit	Power Supply	**Unit**	5
AFE Status	Approved		
SAP Actuals	$1,585,005 as of 10/06/2023 10:02 PM	**SAP Service Status**	TECO
SAP Service Update	11/05/2023 01:04 PM		

AFE Details

AFE Details

Type of Commitment	Project
Description and Purpose	The MK05 Air Gap Baffle (AGB) assemblies were rebuilt in 2007 by a third party after a loss of oil event destroyed the original equipment. In accordance with the OEM recommendation and in preparation for unbudgeted O&M costs and long delays during the winter 2023 outage, engineering recommends replacing the AGB assemblies with the newly designed AGB provided by the OEM. This can be accomplished within the existing timeline of the outage and avoid costly change orders and delays.
Capital Justification	The AGB's are a unit of property and essential to the performance of the Generator / System. The design of these AGBs makes removal of them difficult and often leads to damage during the extraction process, which removes the chances of repair. The unit of property will need to be replaced with the upgraded design from the OEM.

Project Justification Category	Reliability	**Units of Property**	GENERATOR
Start Date	12/5/2022	**Functional Location**	MK-05-TB
End Date	2/23/2023	**Planned In-Service Date**	2/23/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Kathleen Alba		
Proj Manager Alt.	Kelly Casey		

Financials

Capital Information

Capital Project Definition	G:04203
Capital WBS	
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$443,795	**Material or Salvage - Remove**	$0
Internal Labor - Install	$34,560	**Internal Labor - Remove**	$23,040
Contract Labor - Svcs Install	$719,164	**Contract Labor - Svcs Remove**	$179,791
Other (Misc+Overhead) Install	$108,900	**Other (Misc+Overhead) Remove**	$72,600
Total	$1,306,419	**Total**	$275,431

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$1,581,850
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	Not completing this project could result in unit availability issues and mechanical failures of the Generator. By taking advantage of the rotor out inspection to change the AGB's would reduce the cost and provide the best opportunity to upgrade these components. The next opportunity for a full rotor out inspection will be in 2032 or later.
List of Related Projects	List of Related Projects not specified
Alternatives	Continue operating the unit with the current Air Gap Baffles accepting the risk of failures causing outage extension by up to 16 weeks.
Project Sponsor	Jonathan Stogsdill
Created By	Kelly Casey
Created On	Oct 5, 2022
Submitted On	Oct 5, 2022

Approvers

Approver	Level	Decision	On
Stacy Randall	Finance	Approved	10/7/2022
Benjamin Dickinson	Manager	Approved	10/7/2022
Robert Doupe	Director	Approved	10/7/2022
Matthew Schuermann	Officer	Approved	10/7/2022
Charles Walworth	Treasurer	Approved	10/7/2022

Direct Exhibit RD-1

RV01/02-CAP COAL SILO LINER UPGRADE

Summary Approvals Versions Audit View Related Actions

AFE 8670 - RV01/02-CAP COAL SILO LINER UPGRADE

Project Information

Project Information

Project Name	RV01/02-CAP COAL SILO LINER UPGRADE	**Plant**	River Valley
Business Unit	Power Supply	**Unit**	1
AFE Status	Approved		
SAP Actuals	$414,888 as of 10/06/2023 10:02 PM	**SAP Service Status**	REL // USFL
SAP Service Update	11/05/2023 01:03 PM		

AFE Details

AFE Details

Type of Commitment	Project		
Description and Purpose	This project will add a carbon steel liner to each of the 12 coal silo cylinders. The existing silo walls are thinning to the point of failure.		
Capital Justification	The silo bins are a capitalized unit of property. The addition of liners will extend life of the silos.		
Project Justification Category	Reliability-Mechanical Integrity	**Units of Property**	Silo bins
Start Date	12/5/2022	**Functional Location**	RV-01-DP / RV-02-DP
End Date	4/14/2024	**Planned In-Service Date**	4/14/2024
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	3 year	**Type of Spending**	Capital
Project Manager	Kelly Casey		
Proj Manager Alt.	Robbie Gildenblatt		

Financials

Capital Information

Capital Project Definition	
Capital WBS	G:03095-RV01.00 G:03096-RV02.00
Capital PM Order/NWA	9624213 9624214

Capital Cost

Material or Salvage - Install	$527,784	**Material or Salvage - Remove**	$0
Internal Labor - Install	$367,100	**Internal Labor - Remove**	$0
Contract Labor - Svcs Install	$3,143,220	**Contract Labor - Svcs Remove**	$0
Other (Misc+Overhead) Install	$763,569	**Other (Misc+Overhead) Remove**	$0
Total	$4,801,673	**Total**	$0

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$4,801,673

Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk Failure to execute this project increases the risk for unit reliability / availability and potential for fugitive dust compliance.

List of Related Projects List of Related Projects not specified

Alternatives Do nothing and accept risk and higher O&M repair cost.

Project Sponsor Timothy Chancellor

Created By Kelly Casey

Created On Nov 15, 2022

Submitted On Nov 17, 2022

Approvers

Approver	Level	Decision	On
Chelsea Sexton	TIS	Approved	11/22/2022
Stacy Randall	Finance	Approved	11/30/2022
Benjamin Dickinson	Manager	Approved	11/30/2022
Robert Doupe	Director	Approved	12/6/2022
Matthew Schuermann	Officer	Approved	12/6/2022
Charles Walworth	Treasurer	Approved	12/6/2022

Direct Exhibit RD-1

MK05-CAP GENERATOR ROTOR INSULATION AND BLOCKING R...

Summary Approvals Versions Audit View Related Actions

AFE 8783 - MK05-CAP GENERATOR ROTOR INSULATION AND BLOCKING REPLACEMENT

Project Information

Project Information

Project Name	MK05-CAP GENERATOR ROTOR INSULATION AND BLOCKING REPLACEMENT	**Plant**	Muskogee
		Unit	5
Business Unit	Power Supply		
AFE Status	Draft		
SAP Actuals	$1,701,859 as of 10/06/2023 10:01 PM	**SAP Service Status**	REL
SAP Service Update	10/08/2023 02:01 PM		

AFE Details

AFE Details

Type of Commitment	Project
Description and Purpose	Discoverable work identified during the O&M MI for the Unit 5 Generator rotor saw significant damage to the top strap channel and damper bars along with blocking issues. The items identified are capitalized through the repairs and are primarily insulating functions to the windings of the generator rotor.
Capital Justification	Replacement and upgrade to all 32 channels Upgrade of material to all of the blocking elements Upgrade from the use of ripple springs to newer technology

Project Justification Category	Reliability	**Units of Property**	Generator core
Start Date	12/5/2022	**Functional Location**	MK-05-TB- GN-1
End Date	7/15/2023	**Planned In-Service Date**	7/15/2023
Multi-Year AFE	Yes	**Company Code**	0100
Term of Commitment	2 year	**Type of Spending**	Capital
Project Manager	Kathleen Alba		

Financials

Capital Information

Capital Project Definition	G:04752
Capital WBS	
Capital PM Order/NWA	Capital Order not specified

Capital Cost

Material or Salvage - Install	$192,688	**Material or Salvage - Remove**	$82,581
Internal Labor - Install	$55,000	**Internal Labor - Remove**	$0
Contract Labor - Svcs Install	$1,404,399	**Contract Labor - Svcs Remove**	$95,409
Other (Misc+Overhead) Install	$427,857	**Other (Misc+Overhead) Remove**	$0
Total	$2,079,944	**Total**	$177,990

Total Summary

Third Party Reimbursements	$0
Partner Reimbursements	$0
Total (Net)	$2,257,934
	Total AFE Amount after reimbursements

Further Information

Further Information

Statement of Risk	Failure to execute this project could possibly cause unplanned outage and reliability issues due to the age and condition that was discovered during inspection. High risk of fault on the parallel rings if blocking is not addressed.
List of Related Projects	2842 - MK05-CAP Rotor Removal for Flux Probe Installation 7976 - MK05-CAP Generator Bushing Replacement 8186 - MK05-CAP Generator Braided Leads Replacement.
Alternatives	Accept risk identified during this inspection and do nothing. This would be a significant risk with a high likelihood of failure.
Project Sponsor	Jonathan Stogsdill
Created By	Kathleen Alba
Created On	Feb 22, 2023

Approvers

Approver	Level	Decision	On
	TIS	-	-
Stacy Randall	Finance	-	-
Kelly Casey	Manager	-	-
Robert Doupe	Director	-	-
Matthew Schuermann	Officer	-	-
Charles Walworth	Treasurer	-	-