CONFIDENTIAL

The Empire District Electric Company d/b/a Liberty

ER-2024-0261

CONFIDENTIAL – The information provided in the "Description & Justification" column for projects DA0640, DR0188, TA0925, TA0941, and TR150 is deemed "Confidential" in accordance with Commission Rule 20 CSR 4240-2.135(2)(A)7, as it contains important security, cybersecurity and safety information related to the Company's substations. The confidentiality shall be maintained consistent with that Rule and/or Section 386.480 RSMo, as the case may be.

CONFIDENTIAL – The information provided in the "Description & Justification" column for project DR0176 is deemed "Confidential" in accordance with Commission Rule 20 CSR 4240-2.135(2)(A)1, as it contains customer-specific information. The confidentiality shall be maintained consistent with that Rule and/or Section 386.480 RSMo, as the case may be.

Transmission and Distribution Plant Additions Since Prior Case

FERC Function	Funding Project	Funding Project Description	Sum of Activity Cost	Description & Justification
Transmission Plant - Electric	DA0620	Aging Equipment	1,934,593.60	Review the Empire distribution and transmission system for aging equipment that can cause large outages due to end of life failures or are becoming exceeding costly to maintain. Also, look for obsolete equipment that a replacement would require significant physical modification which would delay restoration.
Transmission Plant - Electric	DA0630	Substation Security	9,966,642.47	The installation of physical security in our substations aims to enhance customer reliability, personnel safety and substation security. These investments encompass a range of physical security measures. The goal for these investments is to deliver physical security and deterrence systems.
Transmission Plant - Electric	DA0640	SCADA Installation	1,522,062.84	[redacted]
Transmission Plant - Electric	DR0001	Relocate T&D for Hwy Changes	2,231,251.83	Trended budget item required for city and state road moves to relocate distribution and transmission assets.
Transmission Plant - Electric	DR0004	Cge Jplin Dst Volt 4kV to 12kV	1,576,284.49	The Joplin downtown 4kV system was served out of three substations which were isolated from all neighboring 12kV circuits and substations. By virtue of its lower primary voltage, the 4kV system had the highest available fault current and arc flash values in the region. Over the years this area has become smaller as previous conversion projects moved load to Subs 145, 372 and 59. Those subs are not able to take the remaining load, so this group of projects, in conjunction with substation projects, are necessary to achieve the goal of full conversion to 12kV.
Transmission Plant - Electric	DR0188	Repl Struc Tran Dist Heatonvill#338	1,235,000.00	[redacted]
Transmission Plant - Electric	DR0190	Repl Wood Struct Humansville #308	2,277,379.37	Project identified through substation maintenance efforts. Final result would establish the platform of a possible conversion of 34.5kV to 69kV sometime in the future. Current breakers are 45-65 years old and existing (3) 1-phase xfmrs are 75 years old. All useful life has been extinguished out of the existing infrastructure.
Transmission Plant - Electric	TA0255	BD Health Substn & 69kV insulations	1,214,394.34	A new substation is to be constructed approximately three miles north of Humansville, MO. This is in response to a proposed customer growth request for 13MW load. It will be necessary to procure a two to three acre site for this substation. The substation should be consisted of a one-bay 69kV transmission box structure and only a single 69kV breaker to be included for transformer protection of a new 22.4MVA 69/12.47kV power transformer. A D-2 distribution structure shall be constructed and contain three 12.47kV breakers, one of which will feed a 12.47kV circuit. A new control enclosure will be required for this project to house the associated relays, controls, and 125VDC battery array as well as allow space for future panel expansion. The construction of this new substation must be coupled with the conversion of approximately 14.5 miles of 34.5kV transmission line for Fairplay East Sub #217 to Collins South #318 through Humansville West Sub #308. All three substations will require changes/upgrades to accommodate this line conversion. The 34.5kV transmission line from Stockton Northwest Sub #324 to Caplinger Sub #304 will be energized at 12.47kV. Approximately 0.75 miles of distribution line build will be required from Stockton AEC Tie Sub #418 to the existing transmission line connecting substations #324 and #304. This will effectively retire Stockton Northwest Sub #324. Caplinger Sub #304 will then require a new single-phase transformer.
Transmission Plant - Electric	TA0923	Inst 2-69kV Brkrs #447 & #258	3,868,116.09	This project is an Operation Toughen-Up reliability improvement project. It will reduce the line exposure of Gateway #258 and minimize the momentary and permanent outages. This will improve the SAIDI and SAIFI performance.
Transmission Plant - Electric	TA0925	Install 69kV Breakers at 322	2,033,221.77	[redacted]
Transmission Plant - Electric	TA0936	Install (2) 161kV Breakers at #432	18,364,759.49	Project will provide positive impacts to multiple substations which are either landlocked or are experiencing high load conditions during peak load scenarios. A lack of alternate source options cause inabilities for Operations to be able to switch load to relieve feeders. Inadvertent tripping of equipment has occurred under high loading which further restrict restoration efforts. Impacted substations include: 432, 105, 436, 421, 108, 110, 360, 109, 395. Specifically 432 with radial industrial feeders without options for switching, 105, 436 & 421 have shown Winter loading issues without switching options, trip events and conductor issues, 108 impacted via 421 ability to switch load for voltage profile issues, 110 & 360 relief needed and radially fed industrial (Tamko), reduce exposure on 109 & 395 ckt's which extend far beyond reasonability for adequate service. The installment of additional capacity at Sub #432 and circuitry to connect to existing infrastructure will allow for alleviation of the above mentioned substations and result in the ability to provide flexibility, redundancy, and resiliency to the Webb City, Purcell, and North Joplin areas.
Transmission Plant - Electric	TA0937	Install (2) 69kV Breakers at #251	10,501,661.28	Greenfield Substation #614 is an aged facility with many outdated deficiencies and requires a complete replacement. The 69kV support structures are wood and the work space is confined. It contains 69kV oil circuit breakers averaging nearly 40 years in age and two power transformers averaging nearly 60 years in age. One transformer serves two distribution circuits at 12.47kV and the other serves two distribution circuits at 4.16kV. The controls and electromechanical relays are housed in a stone building which formerly served as the Greenfield Service Center. The building, constructed in the 1930s, also houses communication equipment for the on-site radio tower.
Transmission Plant - Electric	TA0941	Install Monett Switch Automation	2,075,907.30	[redacted]
Transmission Plant - Electric	TA0952	Install SCADA at Sub #392	1,907,057.41	Replace one (1) transformer protection panel, one (1) 161-kV circuit switcher with a 161-kV circuit breaker on the high-side of the 22.4 MVA transformer, and two (2) 12-kV feeder circuit breakers in order to install SCADA at Decatur S Sub #392.
Transmission Plant - Electric	TR0001	Replace BO Trans Poles	13,868,370.98	Routine annual reliability inspection to replace or restore structural integrity through the pole inspection program.
Transmission Plant - Electric	TR0009	Misc Rebuilds/Add - Trans Subs	14,156,164.90	Trended budget item. This budget item is used to replace failed transmission equipment in the substation that occur throughout the year.
Transmission Plant - Electric	TR0010	Misc Rebuilds/Add-Trans Line	2,777,770.58	Trended budget item to rebuild transmission structures and poles identified throughout the year due to failures, discovered potential failures, or other required line moves.
Transmission Plant - Electric	TR0014	Inst 161kV & 69kV Bus Diff#184	17,503,872.22	Replace two existing 161/69/12kV autotransformers with a single 100MVA autotransformer relocated from Substation #452. The existing 69kV box structure will be replaced with a 69kV 5-bay ring bus structure, which will include new switches, PTs, and breakers. Temporary reconfiguration of 161kV 91-0 line and the 12kV distribution lines near the substation will be required to support a 161/12kV mobile substation. 161kV 92-0 line will also need to be temporarily reconfigured to support the 161/69kV mobile substation feeding into the bus which feeds the KAMO lines.
Transmission Plant - Electric	TR0134	Rebld/Recnd 69kV Riverton to Joplin	13,687,155.68	This transmission line was built in 1928 and now equipment is nearing 100 years old and is difficult to repair. The present conductor is sagged beyond it's useful life and has experienced clearance issues that have been addressed individual over the years.

Transmission Plant - Electric	**TR0150**	Rebuild/New 69kV btw Atlas & Kodiak	17,898,784.51	[redacted]
Transmission Plant - Electric	**TR0166**	Rebuild EDE Riverton - Neosho 161Kv	69,527,942.55	The Rebuild of the EDE Riverton to WERE Neosho 161kV line is to comply with the Notice to Construct (NTC) issued to Liberty on December 13, 2019 (SPP-NTC-C-210549). This NTC is to increase the MVA capacity of the line segment between Riverton KS and Neosho KS to reduce SPP congestion and remediate system deficiencies. SPP requires a capacity increase to, at minimum, 250MVA for the line and terminal equipment
Transmission Plant - Electric	**TR0168**	RBLD LINE 161Kv & OPGW 413 TO 438	9,575,602.12	The substation scope includes Riverton Substation #167, Riverton Substation #452, and Columbus Substation #94. The work associated with Riverton Substation #167 includes replacement of 69kV breaker #6901, replacement of 69kV 400A Line and Bus Side Disconnect Switches, line and bus side jumpers, replacement of line relaying panel for breaker #6901 with SEL-311L/SEL-421 standard panel, and splice in new OPGW to existing ADSS. The Riverton #452 will require jumper replacement on line trap and line side switch on #16137. The Columbus Sub #94 will require replacement of line side switch #6931 jumpers and splice in new OPGW to existing ADSS.
Transmission Plant - Electric	**TR0910**	Rebuild 69kV Boston to Greenfield	10,920,371.40	This is a multiphase project to rebuild 69kV transmission line at 33-0 from Sub #614 to Sub #400, Boston Sub #249 to Golden City Sub #251, Golden City Sub #251 to Boston Sub #400 and install automated switch at Boston Sub #400. The 33-0 line has to be upgraded to meet NESC Grade B construction and mitigate integrity of line and structures due to average age of line being around 70+ years.
Distribution Plant - Electric	**AMI001**	AMI	1,641,248.17	As part of its comprehensive grid modernization efforts, Liberty Utilities is incorporating a major upgrade of its metering network to an Advanced Metering Infrastructure (AMI), which will enable two-way communication between customer meters and Liberty Utilities. AMI is an essential LU-wide strategic initiative for its 780,000 electric, water and gas customers. The focus of this specific 24 month, -$48M project is on bringing AMI to LU Central Region's 168,000 electric customers; as such, it represents a major AMI deployment for LU and an important early phase of the overall LU AMI Program.
Distribution Plant - Electric	**DA0155**	Add Xfmr at Ozark Sub #434	6,238,313.07	Summer load on the existing transformer at Sub #434 no longer has sufficient capacity to provide switching flexibility in contingency situations. Surrounding substations are unable to support the 18-19 MVA of load. An additional 22.4 MVA transformer is needed Addition of 69/12kV 22.4 MVA power transformer, protection relay panels, and oil containment with the removal of the existing 69kV capacitor bank, CTs, reactor stand, capacitor switcher, related foundations, and protection panels. The work at Substation Sub #330 consist of the addition of new capacitor switcher, new capacitor bank relay, and capacitor bank relocated from Sub #434, disconnect switches, bus work, ground grid, conduits, and foundations. Ozark S.E. Substation 434 has one 22.4 MVA transformer.
Distribution Plant - Electric	**DA0630**	Substation Security	11,097,843.77	The installation of physical security in our substations aims to enhance customer reliability, personnel safety and substation security. These investments encompass a range of physical security measures. The goal for these investments is to deliver physical security and deterrence systems.
Distribution Plant - Electric	**DA0640**	SCADA Installation	4,061,090.06	This project will expand the Central region's SEL TEAM software platform to reach all available BES substations, which were out-of-scope in the initial 2019 implementation due to CIP constraints. This expansion will require installation of CIP-compliant security equipment at each of the 37 impacted BES substations.
Distribution Plant - Electric	**DA0650**	Wildlife Guards	3,085,728.27	Budget line item reserved for various small-scale projects to install animal guarding throughout the system to protect line and substation equipment to prevent outages and promote system reliability. The wildlife mitigation program will initiate projects that are known to be problematic due to outage cause and number of outages and will then work across the system to ensure proper wildlife protection throughout. Equipment that has been identified for protection include but is not limited to transformer banks, current transformers, gang operated air break switches, lightning arrestor, potential transformers, station service transformer, main bus, dead ends, breakers, and disconnect switches.
Distribution Plant - Electric	**DA0660**	Underground Conductor	8,405,987.74	Budget line item reserved for mitigation measures to rejuvenate or replace underground conductor due to end of service life or degradation across the system.
Distribution Plant - Electric	**DB0001**	Extensions	59,521,342.55	Budget line item reserved for various small scale projects in which extensions to customers and additional new customer connections as needed. Work scopes dependent in extension policy, customer needs, and design requirements to meet new service request(s). Majority work of Construction Design department is encompassed within this budget line item.
Distribution Plant - Electric	**DB0004**	Street Lighting	3,409,200.01	Budget line item reserved for various small-scale projects in which lighting installations are added as needed. Work scopes dependent in extension policy, customer needs, and design requirements to meet new lighting request(s). The majority of the work of the Construction Planning department is encompassed within this budget line item.
Distribution Plant - Electric	**DB0005**	Distribution Transformers	4,106,543.30	Budget line item reserved for various small scale projects in which distribution transformers are replaced and additional new distribution transformers are purchased as needed. Work scopes dependent on policy, customer needs, failure rates throughout the budgeted year, and design requirements to meet service request(s).
Distribution Plant - Electric	**DB0006**	Customer's Meters	2,951,122.99	Budget line item reserved for various small scale projects in which customer meters need ordered or replaced. Work scopes dependent on policy, customer needs, and design requirements to meet service request(s). This line item is entirely separate from ongoing AMI efforts.
Distribution Plant - Electric	**DB0007**	Customer's Services	19,520,780.20	Budget line item reserved for various small scale projects in which customer services require replacement or installation. The work scope is depend on policy, customer needs, and design requirements to meet service request(s). This line item is entirely separate from ongoing AMI efforts.
Distribution Plant - Electric	**DB0010**	Misc Dist of OH Lines	12,763,234.04	Install/remove or replace overhead assets across system as needed. This budget line item reserved for various scale projects in which overhead distribution services to customers are maintained. Work scopes dependent on policy, customer needs, and design requirements to meet service request(s).
Distribution Plant - Electric	**DB0011**	Misc Dist of UG Lines	1,037,944.79	Install/remove or replace underground assets across system as needed. Budget line item reserved for various scale projects in which underground distribution services to customers and additional new customer connections are maintained or initiated. Work scopes dependent on policy, customer needs, and design requirements to meet service request(s).
Distribution Plant - Electric	**DR0001**	Relocate T&D for Hwy Changes	1,372,832.54	Trended budget item required for city and state road moves to relocate distribution and transmission assets.
Distribution Plant - Electric	**DR0002**	Replace Bad Order Distr Poles	18,298,855.59	System reliability and public safety are improved by the identification and replacement of reject poles prior to structural failure.
Distribution Plant - Electric	**DR0004**	Cge Jplin Dst Volt 4kV to 12kV	18,896,387.86	The Joplin downtown 4kV system was served out of three substations which were isolated from all neighboring 12kV circuits and substations. By virtue of its lower primary voltage, the 4kV system had the highest available fault current and arc flash values in the region. Over the years this area has become smaller as previous conversion projects moved load to Subs 145, 372 and 59. Those subs are not able to take the remaining load, so this group of projects, in conjunction with substation projects, are necessary to achieve the goal of full conversion to 12kV.

Distribution Plant - Electric	**DR0008**	Distr. Reliability Improvement	1,579,756.51	This budget line is designated for use for reliability improvement on worst-performing distribution circuits. Work includes fusing of lateral taps, coordination and re-fusing of existing fuse locations, coordination and placement of single and three-phase reclosers.
Distribution Plant - Electric	**DR0009**	Misc Rebuilds/Add to Dist Subs	1,305,771.88	Trended Budget Item. Project need for various rebuilds and additions to distribution substation facilities as needed.
Distribution Plant - Electric	**DR0010**	Misc Rebuilds/Add - Dist Lines	1,273,851.39	Trended budget item. Provide mitigated solutions on our aging infrastrucutre as required throughout the construction year. This budget item is used to rebuild distribution structures and poles identified throughout the year due to failures, discovered potential failures, or other required line moves.
Distribution Plant - Electric	**DR0176**	Replace SWG at Northpark Mall	1,121,694.82	[redacted]
Distribution Plant - Electric	**DR0190**	Repl Wood Struct Humansville #308	2,441,250.08	Project identified through substation maintenance efforts. Final result would establish the platform of a possible conversion of 34.5kV to 69kV sometime in the future. Current breakers are 45-65 years old and existing (3) 1-phase xfmrs are 75 years old. All useful life has been extinguished out of the existing infrastructure.
Distribution Plant - Electric	**DR0209**	Rebuild/Increase Cap-Branson	6,873,764.32	Rebuild conductor and increase switching capability in the Branson Area Distribution System.
Distribution Plant - Electric	**DR0231**	Rebuild 3-Phase Hwy B Granby	1,332,053.40	Rebuild/reconductor 2.82 miles of 12kV 3-phase ckt 3472 from downtown Granby south along Hwy B to Mo Hwy 86. Upsize phase conductors to 556MCM AAC.
Distribution Plant - Electric	**DR0232**	Build/Recond 3-Phase Kodiak Rd	1,509,728.02	Build/Reconductor 3.3 miles of 12kV 3-phase along Kodiak Rd from Oak Rd north to just south of Mo Hwy 86 involving portions of circuits 1841, 5601, & 5603 in/near Neosho, MO.
Distribution Plant - Electric	**DS0130**	Service Center Improv/Addition	9,640,689.22	This budget line item contains service center improvements and additions across the system. The budget includes an annual amount designated for each area for miscellaneous capital improvements in addition, but not limited to, the following: New service center in Aurora, fencing in Republic and remodel of downtown office in Ozark. The project in Aurora, MO includes a service center to house electric and water functions. This building will serve as base of Operations for the Area-211 line crews and substation crews, water operations, and support staff with offices for construction design, management, and Business and Community Development personnel. Customers will benefit from this project by providing a more efficient layout, increased and improved storage facilities and improved staging areas; this will prove a quicker response from internal crews during storms and outages reducing the outage durations during these times. In addition, the customer service experience will be improved by providing the ability for bill pay for customers in their hometown. The improved traffic flow and reduced backing requirements will reduce the risk of accidents and potential impacts to overall safety metrics that could reduce costs to customers and company. The addition of a storm shelter provide much needed refuge from tornadoes for employees and any community members in/around the facility at times of danger.
Distribution Plant - Electric	**STORM JOBS**	Storm Jobs	3,641,048.56	Budget line reserved for various storms throughout the system that cause outages and damage to transmission facilities.
Distribution Plant - Electric	**TA0255**	BD Health Substn & 69kV insulations	6,171,183.35	A new substation is to be constructed approximately three miles north of Humansville, MO. This is in response to a proposed customer growth request for 13MW load. It will be necessary to procure a two to three acre site for this substation. The substation should be consisted of a one-bay 69kV transmission box structure and only a single 69kV breaker to be included for transformer protection of a new 22.4MVA 69/12.47kV power transformer. A D-2 distribution structure shall be constructed and contain three 12.47kV breakers, one of which will feed a 12.47kV circuit. A new control enclosure will be required for this project to house the associated relays, controls, and 125VDC battery array as well as allow space for future panel expansion. The construction of this new substation must be coupled with the conversion of approximately 14.5 miles of 34.5kV transmission line for Fairplay East Sub #217 to Collins South #318 through Humansville West Sub #308. All three substations will require changes/upgrades to accommodate this line conversion. The 34.5kV transmission line from Stockton Northwest Sub #324 to Caplinger Sub #304 will be energized at 12.47kV. Approximately 0.75 miles of distribution line build will be required from Stockton AEC Tie Sub #418 to the existing transmission line connecting substations #324 and #304. This will effectively retire Stockton Northwest Sub #324. Caplinger Sub #304 will then require a new single-phase transformer.
Distribution Plant - Electric	**TA0923**	Inst 2-69kV Brkrs #447 & #258	5,488,550.07	This project is an Operation Toughen-Up reliability improvement project. It will reduce the line exposure of Gateway #258 and minimize the momentary and permanent outages. This will improve the SAIDI and SAIFI performance.
Distribution Plant - Electric	**TA0925**	Install 69kV Breakers at 322	3,476,512.37	Install 3 new 69kv breakers and replace 2 12kv breakers at sub #322 and replace (2) 69kV Dead-End structures and reroute circuit 322-1.
Distribution Plant - Electric	**TA0936**	Install (2) 161kV Breakers at #432	12,008,617.22	Project will provide positive impacts to multiple substations which are either landlocked or are experiencing high load conditions during peak load scenarios. A lack of alternate source options cause inabilities for Operations to be able to switch load to relieve feeders. Inadvertent tripping of equipment has occurred under high loading which further restrict restoration efforts. Impacted substations include: 432, 105, 436, 421, 108, 110, 360, 109, 395. Specifically 432 with radial industrial feeders without options for switching, 105, 436 & 421 have shown Winter loading issues without switching options, trip events and conductor issues, 108 impacted via 421 ability to switch load for voltage profile issues, 110 & 360 relief needed and radially fed industrial (Tamko), reduce exposure on 109 & 395 ckt's which extend far beyond reasonability for adequate service. The installment of additional capacity at Sub #432 and circuitry to connect to existing infrastructure will allow for alleviation of the above mentioned substations and result in the ability to provide flexibility, redundancy, and resiliency to the Webb City , Purcell, and North Joplin areas.
Distribution Plant - Electric	**TA0937**	Install (2) 69kV Breakers at #251	10,898,355.32	Greenfield Substation #614 is an aged facility with many outdated deficiencies and requires a complete replacement. The 69kV support structures are wood and the work space is confined. It contains 69kV oil circuit breakers averaging nearly 40 years in age and two power transformers averaging nearly 60 years in age. One transformer serves two distribution circuits at 12.47kV and the other serves two distribution circuits at 4.16kV. The controls and electromechanical relays are housed in a stone building which formerly served as the Greenfield Service Center. The building, constructed in the 1930s, also houses communication equipment for the on-site radio tower.
Distribution Plant - Electric	**TR0009**	Misc Rebuilds/Add - Trans Subs	1,650,179.39	Trended budget item. This budget item is used to replace failed transmission equipment in the substation that occur during the year.
			477,445,828.09	