

Chapter 7 - Appendix A

Transmission and Distribution Supplemental Information

Table 7A.1 MTEP Transmission Projects in Missouri¹

Project Approved	Project Title	Project Description	Allocation Type per FF	Estimated Cost	Expected ISD (Max)
A in MTEP21	New Belleau 138 kV Capacitor Bank	Install 120 Mvar capacitor bank at Belleau 138 kV	BRP	\$3,500,000.00	06/02/2025
A in MTEP20	Reconductor Bland-Tegeler 138 kV line	Reconductor line to 1200 A summer emergency capability	BRP	\$30,800,000.00	06/01/2023
A in MTEP20	Replace Mason 345/138 kV Transformer	Replace 345/138 kV, 560 MVA Transformer #2 with a 700 MVA unit	BRP	\$10,800,000.00	01/01/2026
A in MTEP20	Upgrade Labadie 345 kV substation	Upgrade switches and CTs to 3000A. Labadie 345 kV bus-tie 2-3 Upgrade	BRP	\$1,600,000.00	12/01/2024
A in MTEP20	New Wright City 345 kV substation	Joint project between Ameren Missouri and AECl. Tap the Ameren Missouri Labadie-Montgomery 345kV line via a new 3-breaker, 345kV ring bus near the intersection of the line and the AECl (Central Electric Power Coop) 161kV line west of Charrette. Rebuild the existing 161kV line between the tap point and the AECl Wright City Substation as double-circuit 345/161kV. Install new 345/161kV step down transformer at Wright City.	BRP	\$52,700,000.00	06/01/2026
A in MTEP21	New Burns 345 kV Substation (J1145 Solar)	Construct 3 position ring bus on Montgomery-McCredie 345 kV line for 250 MW Show Me State Solar project J1145	GIP	\$12,800,000.00	06/01/2024
A in MTEP20	New Blue Bird Solar (J817) interconnection	Add terminal facilities at Warrenton 161 kV substation to interconnect J817	GIP	\$3,700,000.00	06/01/2024
A in MTEP21	New Sikeston 161 kV Substation	Construct new Comstock (Sikeston) 161kV breaker-and-a-half substation to interconnect Ameren's Miner-Sikeston line and	Other	\$8,500,000.00	06/01/2024

¹ 20 CSR 4240-22.045(3)(A)1; 20 CSR 4240-22.045(3)(A)6

Project Approved	Project Title	Project Description	Allocation Type per FF	Estimated Cost	Expected ISD (Max)
		Sikeston Board of Municipal Utilities' New-Madrid-Sikeston 161kV line. The City of New Madrid will install a 161/69kV xfmr to serve new industrial customer.			
A in MTEP20	Upgrade Tyson 138 kV substation	Replace overstressed 138 kV breakers	Other	\$9,900,000.00	12/01/2023
A in MTEP20	Reconfigure Viburnum 161/34 kV Substation	Install 2 161 kV line breakers and 1 161 kV circuit switcher on the transformer to split the CLK-CMCO-2 line and create 2 circuits into Viburnum Substation.	Other	\$4,800,000.00	12/01/2024
A in MTEP20	Replace Tyson 345/138 kV Transformer	Replace XFMR 1 with a hardened unit and replace the 138kV XFMR 1 breaker and Replace XFMR 3 breaker.	Other	\$11,700,000.00	12/01/2023
A in MTEP20	Relocate Page 138 kV substation to new Bugle 138 kV Substation	Relocate the existing 138 kV Page substation to the new Bugle site. 138 kV to be built as breaker and a half arrangement.	Other	\$51,500,000.00	06/01/2024
A in MTEP20	Rebuild Page-Sioux 138 kV line (4)	Rebuild existing Missouri River crossing (Str. 112-117)	Other	\$24,800,000.00	12/02/2024
A in MTEP20	Upgrade Kelso 345/161 kV substations	Install new 3000 A circuit breaker and motor-operated disconnect switch on 345 kV position V3. Replace the existing Kelso substation 336 MVA auto transformer #1 with a 560 MVA transformer. Replace the existing Kelso substation 161 kV bus tie 1-2 position H7 circuit breaker and bus disconnect switches. Replace the existing Kelso substation 161 kV position H6 circuit breaker and disconnect switch, upgrade the bus conductor of position H6 to achieve a minimum current carrying capability of 3000 A. Replace the existing Kelso substation H3 and H4 161 kV circuit breakers and disconnect switches in the CAPE-KEL-2 and KEL-MINR-2 terminals. Upgrade	Other	\$18,100,000.00	12/01/2024

Project Approved	Project Title	Project Description	Allocation Type per FF	Estimated Cost	Expected ISD (Max)
		Kelso substation positions H3 and H4 bus conductors to achieve a minimum current carry capability of 2000 A. Replace the existing Kelso substation 161 kV disconnect switch on position H10. Replace the existing Kelso substation H11 and H12 161 kV disconnect switches (line and bus) in the CAPE-KEL-3) and KEL-MORLEY-3 terminals.			
A in MTEP20	Rebuild Pike 161 kV Substation	Rebuild the Pike 161 kV substation to a Ring bus configuration.	Other	\$18,000,000.00	12/01/2023
A in MTEP20	Upgrade McClay 138 kV Substation	Add breakers to each of the 138 kV lines and upgrade relays.	Other	\$3,000,000.00	06/01/2023
A in MTEP20	New Barrett Station 138/12 kV Transformer No. 2	Install 3 breakers in a main-tie-main configuration with an open bus tie to facilitate the installation of a 2nd transformer. Install circuit switchers on the existing and new transformers.	Other	\$20,500,000.00	12/31/2022
A in MTEP20	New Dougherty Ferry 138/12 kV substation	Tap the Mason-Meramec-1 & 2 lines to provided a main-tie-main configuration for the installation of a new 138-12 kV substation.	Other	\$19,400,000.00	12/01/2025
A in MTEP20	Rebuild Lutesville-St. Francois 345 kV line	Rebuild 63 miles of 345kV wood H-frame circuit.	Other	\$62,800,000.00	12/01/2024
A in MTEP20	Upgrade Spencer Creek 345 kV substation	Replace switches on 345kv pos V3, V5, V6, V7 and reactor position.	Other	\$600,000.00	06/01/2022
A in MTEP20	Replace Structures Bland-Franks 345 kV line	Replace structures and shield wire on approximately 44 miles 345kV line.	Other	\$52,000,000.00	06/01/2026
A in MTEP20	New Highway M 138/12 kV substation	Install 2 unit 138-12.47 kV substation on a site adjacent to the Dardenne Substation.	Other	\$20,000,000.00	12/01/2024
A in MTEP20	New Fountain Lakes 138/12 kV transformer No. 2	Add 2nd 138-12 kV unit at Fountain Lakes Substation.	Other	\$9,300,000.00	12/01/2024
A in MTEP20	New Montgomery 345 kV shunt reactor	Install 50 Mvar shunt reactor at Montgomery 345 kV substation.	Other	\$3,800,000.00	12/01/2024
A in MTEP20	New Fredericktown 138 kV substation	Install 138 kV ring bus at Fredericktown Substation	Other	\$11,100,000.00	12/01/2023

Project Approved	Project Title	Project Description	Allocation Type per FF	Estimated Cost	Expected ISD (Max)
A in MTEP20	New Wittenberg-Trail of Tears 138 kV line	Wabash Valley- Install new Wittenberg ring bus switching station on the Grand Tower-Perryville line. Reconfigure Trail of Tears substation to BAAH. Install new 161 kV line from Trail of Tears to Charmin Bulk Substation. Install 2 breakers at Charmin Bulk Substation. Ameren - Install 12 miles of new 138 kV line from Wittenberg Substation to Trail of Tears Substation. Install new 161-138 kV transformer at Trail of Tears Substation.	Other	\$52,200,000.00	06/01/2024

Table 7A.2 Transmission Projects under Consideration²

Project Name	Project Description	Expected ISD (Max)
New Vanhorn 345 kV Substation for Wolf Creek Solar (J1352)	Construct the Interconnection Facilities at the J1352 Interconnection Switching Station, line cut-in and relay upgrades. Vanhorn sub on Montgomery-Spencer Creek 345 kV line.	06/01/2025
New Tunnel (Freeburg, MO) 138/25kV Substation	Build a new 138-25 kV substation near the town of Freeburg, MO	06/01/2028
Replace Pole and Insulator Program - MTEP23	Pole and Insulator Replacements requested by Maintenance.	12/01/2025
Replace Breakers and Relays Program - MTEP23	Breaker and Relay Upgrades Requested by Maintenance (Missouri and Illinois)	12/01/2025
Upgrade Effingham NW-Neoga 138 kV line	Upgrade terminal equipment at Hannibal West, replace two structures and shunts in Neoga – Effingham NW 138 kV line. These are Non-SSR related needs.	12/01/2024
Replace Mason 345/138 kV Transformer No. 1	Replace Mason 345/138 kV Transformer #1 with a 700 MVA Unit	12/01/2025

² 20 CSR 4240-22.045(6)

Project Name	Project Description	Expected ISD (Max)
New Huck Finn Solar 345 kV interconnection (J956)	Connect a 200MW solar farm via 345 kV leadline from Interconnection Customer collector substation to existing Spencer Creek switching station.	06/01/2024
Upgrade Warson 161 kV substation	Line BKR on 4 line terminals, High Side interrupting devices on XFMRs 1,2,3,4, Add bus tie 2-3 BKR	06/02/2025
Reconfigure Moreau 161 kV substation	Construct a four position (six ultimate) 161 kV ring bus at Moreau	06/01/2025
New McBaine 161 kV substation	New switching station at McBaine tap off LYMT-OVRT-3	06/01/2025
Rebuild Sioux-Meppen North-Hull 138 kV line	Rebuild the Sioux-Meppen North-4 from Str. 180-Meppen North and the entire Meppen North-Hull-1494 138 kV line to upgrade aging infrastructure and improve system reliability.	12/15/2024
Upgrade Rush Island 345 kV Substation	Upgrade the Rush Island 345 kV bus to 3000A capability	04/01/2024
Upgrade Guthrie 161 kV substation	Add a 161 kV line breaker to the 161 kV GUTH-LYMT-3 line at Guthrie.	12/01/2024
Upgrade Hunter 161 kV substation	Add Line breakers on H2 and H10; High Side Interrupting Devices on XFMR 1, 2, 3	12/01/2025
Upgrade Sioux 138 kV Substation	Upgrade 15H posn to higher ampacity to increase available capacity of the 700MVA Auto XFMR	12/01/2026
Upgrade St Francois 345 kV substation	Install a new circuit breaker at St. Francois Sub position V43 to complete the ring bus.	12/01/2024
Rebuild Clark 138/161 kV Substation to 138 kV BAAH	Rebuild Clark 138/161 kV Substation to have a 138 kV BAAH bus with 8 positions (4 existing lines, 2 XFMRs, bring in RIV-ALFM-6636) and a 161 kV ring bus with 6 positions (2 existing lines, 2 XFMRs, and new line position to Viburnum). Rebuild the existing Clark-Viburnum 161 kV line to be double circuit 161 kV lines. Add a 161 kV terminal at Viburnum Substation. Route the RIV-ALFM-6636 138 kV line into the new Clark 138 kV BAAH bus. Install 161kV PCB (or CS) on XFMR 3. Install 138kV PCB on XFMR 3. Replace existing differential relaying with new 161kV bus diff, XFMR diff, and 138kV bus diff.	12/01/2027
Reconfigure Mason-Carrollton-Sioux 138 kV lines	Split the ~2 mile Mason-Carrollton-8/Carrollton-Sioux-8 138 kV lines into two separate circuits to avoid the loss of a single structure causing a long-term outage on both Carrollton supplies.	06/01/2025
Upgrade Oran 161 kV substation	Add 161 kV ring bus to split the Kelso- Morley-3 line into two lines	06/01/2026

Project Name	Project Description	Expected ISD (Max)
Upgrade Selma 161 kV substation	Add line breakers to Selma-Rivermines-2 & DPFE-Selma-1 Add High Side Interrupting devices to XFMR 1 & 2	12/01/2024
Upgrade Dardenne 161 kV substation	Add line breakers to Dardenne	12/01/2024
Convert Viaduct 115 kV facilities to 161 kV	Convert 115 kV facilities at Viaduct to 161 kV. Eliminate Viaduct 161 to 115kV transformer T1 by bypassing it, and by changing the taps on Viaduct XFMR 1 from 115 to 161kV. Replace 115kV OCB #5210 with a 161kV puffer breaker.	12/01/2024
Upgrade Pilot Knob 161 kV substation	Add circuit switcher for XFMR 1 and line breaker for 161 kV FLET –PKNB -2	12/01/2025
Rebuild Troy-Pike 161 kV line	Add Dual OPGW to the TROY-PIKE-1 Line from Pike to the Auburn tap (Structure 309 or so). Adding OPGW to the TROY-PIKE-1 line will require the line to be rebuilt. Since the line is being rebuilt, dual OPGW is to be added. At the Auburn tap the OPGW will be terminated to allow a connection to the AECl Fiber on their portion of the TROY-PIKE-1 line and brought the rest of the way to the new Harley Substation.	06/01/2024
New Copley 138-12 kV Substation	Build a new four position 138 kV Ring bus needed to connect two 13/12 kV transformers	12/01/2024
Rebuild Stoddard-Essex 161 kV line	Rebuild the 5.4 mile Stoddard-Essex-3 161 kV Transmission Line with T2 conductor rated at 2,000 amps Summer Emergency Conditions and 2 EA 72-Fiber OPGW shield wires.	06/01/2025
New Bugle 138 kV Capacitor (120 Mvar)	120 Mvar Capacitor at Bugle	12/01/2024
New Firebrick Wind Farm (J1026)	J1026 is seeking interconnection service for 380 MW for Wind facility. The Connection will be made at the 345 kV Spencer Creek Substation	06/01/2024
New Zachary generation interconnection FCAs (J1025-J1182)	Install a 2nd Zachary 345/161 kV transformer, construct a 2nd Zachary - Adair 161 kV transmission line, and re-route existing Appanoose-Adair 161 kV Transmission line.	12/01/2025
New Northeast Missouri Wind interconnection (J1025)	Construct the new 345 kV Fabius substation in Knox County, Missouri to provide a Point of Interconnection for the Generating Facility with a terminal that will consist of all necessary terminal equipment to connect the J1025 leadline to 345kV Fabius substation bus. J1025 is a 300 MW Wind project interconnecting to the Zachary-Maywood 345 kV line	06/01/2024

Project Name	Project Description	Expected ISD (Max)
New Morris Solar interconnection (J1182)	One 345 kV terminal in the Zachary substation. The terminal will consist of all necessary terminal equipment to connect the J1182 leadline to the Zachary substation bus. J1182 is a 250 MW Solar project interconnecting to the Zachary substation 345 kV bus	11/01/2024
Reconfigure Warrenton 161 kV substation	Install a 161 kV Ring bus at Warrenton Substation	06/01/2024
New Overton 345/161 kV transformer No. 2	Add a second 345/161 kV Transformer at Overton.	12/30/2024
New Dillon 138 kV Capacitor Bank (14 Mvar)	Add a 14 Mvar capacitor bank at Dillon with a separate breaker. The existing 28 Mvar bank will be reduced to 14 Mvar.	06/01/2023
Upgrade Callaway 345 kV Substation	Add breakers on the high side of safeguard transformer A and B at Callaway 345 kV substation	12/01/2026
New Adna 345 kV Ring Bus for J1107 Lutesville Solar	The Adna switching station will be a ring bus arrangement with three-line terminal positions and provisions for one additional future terminal position. The existing Kelso-Lutesville 345 kV transmission line will be cut.	11/01/2024
Add J994 Guthrie Solar at Guthrie 161 kV	Add 161 kV terminal in the Guthrie substation for J994 project.	06/01/2025
Add J987 Warren Solar at Montgomery 161 kV	Add 161 kV terminal in the Montgomery substation for the J987	06/01/2025
New Bullion 161 kV Ring Bus for J1087 Kelso Solar	Construct a new 161 kV switching station in Scott County, Missouri to provide a Point of Interconnection for the Generating Facility. The new 161 kV Bullion switching station will have a four-terminal ring-bus design with three terminal positions installed. Split the existing Kelso – Miner 161 kV transmission line.	12/01/2024
New Harley 161 kV Ring Bus for J1268 Winfield Solar	Build a 161 kV three position ring bus along the Troy-Pike 161 kV transmission line in Lincoln County, Missouri. This is for Winfield Solar J1268.	12/01/2023
New Vanduser 161 kV Ring Bus for J1034 Ringer Solar	Construct a new 161 kV switching station in Stoddard County, Missouri to provide a Point of Interconnection for the Generating Facility. The new Vanduser 161 kV J1034 Interconnection Switching Station will have a four-terminal ring-bus design with three terminal positions installed. Split the existing Morley – Stoddard 161 kV transmission line	06/01/2025

Project Name	Project Description	Expected ISD (Max)
New Rootbeer 345 kV Ring Bus for J976 Split Rail Solar	Construct a new 345 kV switching station in Warren County, Missouri to provide a Point of Interconnection for the Generating Facility. The new Rootbeer 345 kV J976 Interconnection Switching Station will have a four-terminal ring-bus design with three terminal positions installed. Split the existing Belleau – Montgomery 345 kV transmission line.	12/01/2025
New Wildwood 345/138 kV Transformer No 2	Upgrade 560 MVA TX to a 700 MVA 345/138 kV Transformer	06/01/2024
New Overton 161 kV Capacitor Bank	New 67 MVAR Capacitor at Overton 161 kV	04/01/2024
New Rush Island Area Statcoms	Add 250 MVAR Statcom at Bugle, Arnold, Mason and Highway N substations.	06/01/2025

Table 7A.3 Transmission and Distribution Avoided Costs³

Avoided Cost	Transmission Distribution	
	\$/kW-yr	\$/kW-yr
2024	\$1.5	\$21
2025	\$1.5	\$22
2026	\$1.6	\$23
2027	\$1.6	\$23
2028	\$1.6	\$23
2029	\$1.7	\$24
2030	\$1.7	\$24
2031	\$1.7	\$25
2032	\$1.8	\$25
2033	\$1.8	\$26
2034	\$1.8	\$26
2035	\$1.9	\$27
2036	\$1.9	\$28
2037	\$1.9	\$28
2038	\$2.0	\$29
2039	\$2.0	\$29
2040	\$2.1	\$30
2041	\$2.1	\$30
2042	\$2.1	\$31
2043	\$2.2	\$32

³ 20 CSR 4240-22.045(2); 20 CSR 4240-22.045(3)(A)3; 20 CSR 4240-22.050(5)(A)1

Compliance References

20 CSR 4240-22.045(2) 8
20 CSR 4240-22.045(3)(A)1 1
20 CSR 4240-22.045(3)(A)3 8
20 CSR 4240-22.045(3)(A)6 1
20 CSR 4240-22.045(6) 4
20 CSR 4240-22.050(5)(A)1 8