

*Table AR-5
Asset Renewal Circuit Breakers*

System Additions	Projected In-Service Year	Planning Zone	MISO MTEP Appendix Status	MTEP PRJID	MTEP Cost or Cost Range	Need Category
Circuit breaker replacements	2017	Various	--	--	<10	Mechanism design issues (7 units) 69 kV
Circuit breaker replacements	2017	Various	--	--	<10	End of life, parts obsolescence (6 units) 69 kV
Circuit breaker replacements	2017	Various	--	--	<10	End of life, parts obsolescence (9 units) 138 kV
Waupun	2018	4	Targeted A 17	12100	4.2	End of life, parts obsolescence (4 units) 69 kV
Circuit breaker replacements	2018	Various	--	--	<10	End of life, parts obsolescence (6 units) 69 kV
Circuit breaker replacements	2018	1	--	--	<10	End of life, parts obsolescence (3 units) 115 kV
Circuit breaker replacements	2018	Various	--	--	<10	End of life, parts obsolescence (7 units) 138 kV
Racine Substation, reconfiguration	2019	5	B, Target A 18	9991	10-25	End of life, bushing leaks (2 units) 345 kV; End of life, live tank, free standing CTs (1 unit) 345 kV; Optimizing breaker renewal, operating flexibility, security, and cost
Circuit breaker replacements	2019	Various	--	--	<10	End of life, parts obsolescence (17 units) 69 kV
Circuit breaker replacements	2019	Various	--	--	<10	End of life, parts obsolescence (14 units) 138 kV
Edgewater Substation, reconfiguration	2020	4	Target A 18	--	10-25	End of life, bushing leaks (4 units) 345 kV; End of life, live tank, free standing CTs (2 units) 345 kV; Optimizing breaker renewal, operating flexibility, security, and cost

*Table AR-5
Asset Renewal Circuit Breakers (continued)*

System Additions	Projected In-Service Year	Planning Zone	MISO MTEP Appendix Status	MTEP PRJID	MTEP Cost or Cost Range	Need Category
Circuit breaker replacements	2020	Various	--	--	<10	End of life, parts obsolescence (14 units) 69 kV
Circuit breaker replacements	2020	Various	--	--	<10	End of life, parts obsolescence (23 units) 138 kV
Circuit breaker replacements	2021-2026	Various	--	--	10-25	End of life, parts obsolescence, mechanism design issues (47 units) 69 kV
Circuit breaker replacements	2021-2026	Various	--	--	<10	End of life, parts obsolescence, mechanism design issues (6 units) 115kV
Circuit breaker replacements	2021-2026	Various	--	--	>25	End of life, parts obsolescence, mechanism design issues (91 units) 138kV
Circuit breaker replacements	2021-2026	Various	--	--	10-25	End of life, parts obsolescence, mechanism design issues (4 units- Granville) 345kV