

Table AR-3
Transmission System Additions – Asset Renewal Circuit Breakers

System Additions	Projected In-Service Year	Planning Zone	Need Category	Cost Estimate - Refer to Funding Project and Sum of Total (2009-2018) in Asset Renewal Financial Table
Circuit breaker replacements	2010	Various	CT Deficiency, Control scheme incompatibility (2 units) 69 kV	Various
Circuit breaker replacements	2010	Various	End of life, parts obsolescence (1 unit) 69 kV	Various
Circuit breaker replacements	2010	Various	Mechanism design issues (2 units) 69 kV	Various
Circuit breaker replacements	2010	Various	Type S bushings (1 unit) 69 kV	Various
Circuit breaker replacements	2010	Various	Type U bushings (29 units) 69 kV	Various
Circuit breaker replacements	2010	Various	End of life, part obsolescence (4 units) 138 kV	Various
Circuit breaker replacements	2010	Various	Type U bushings (17 units) 138 kV	Various
Circuit breaker replacements	2010	Various	CT deficiency, control scheme incompatibility (1 unit) 230 kV	Various
Circuit breaker replacements	2010	Various	Type U bushing (9 units) 230 kV	Various

Table AR-3
Transmission System Additions – Asset Renewal Circuit Breakers (continued)

System Additions	Projected In-Service Year	Planning Zone	Need Category	Cost Estimate - Refer to Funding Project and Sum of Total (2009-2018) in Asset Renewal Financial Table
Circuit breaker replacements	2010	Various	EPA SF6 emission reduction (2 units) 345 kV	Various
Circuit breaker replacements	2011	Various	Mechanism design issues (4 units) 69 kV	Various
Circuit breaker replacements	2011	Various	Type U bushings (26 units) 69 kV	Various
Circuit breaker replacements	2011	Various	End of life, parts obsolescence (1 unit) 138 kV	Various
Circuit breaker replacements	2011	Various	Type U bushings (18 units) 138 kV	Various
Circuit breaker replacements	2011	Various	CT deficiency, control scheme incompatibility (2 units) 230 kV	Various
Circuit breaker replacements	2011	Various	Over duty rating (2 units) 230 kV	Various
Circuit breaker replacements	2012	Various	End of life, parts obsolescence (2 units) 69 kV	TBD
Circuit breaker replacements	2012	Various	Type U bushings (40 units) 69 kV	TBD

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Transmission System Additions – Asset Renewal Circuit Breakers (continued)

System Additions	Projected In-Service Year	Planning Zone	Need Category	Cost Estimate - Refer to Funding Project and Sum of Total (2009-2018) in Asset Renewal Financial Table
Circuit breaker replacements	2012	Various	Type U bushings (8 units) 138 kV	TBD
Circuit breaker replacements	2012-2020	Various	End of life, parts obsolescence (12 units) 69 kV	TBD
Circuit breaker replacements	2012-2020	Various	Mechanism design issues (64 units) 69 kV	TBD
Circuit breaker replacements	2012-2020	Various	End of life, parts obsolescence (13 units) 138 kV	TBD
Circuit breaker replacements	2012-2020	Various	Over duty rating (4 units) 138 kV	TBD
Circuit breaker replacements	2012-2020	Various	Bushing flange oil leak (27 units) 345 kV	TBD
Circuit breaker replacements	2012-2020	Various	End of life, parts obsolescence (8 units) 345 kV	TBD
Circuit breaker replacements	2012-2020	Various	EPA SF6 emission reduction (8 units) 345 kV	TBD