

**Table PR-22  
Substation Equipment Additions and Replacements**

Identified need	Potential additions or replacements	Capacitor bank Capacity (MVAR)	System Need Year	Projected In-Service Year	Planning Zone
relieve overloads or low voltages under contingency (B1)	Install 2-8.0 MVAR capacitor bank at Indian Lake 69-kV Substation	16.33	2010	2010	2
relieve overloads or low voltages under contingency (B1)	Install reactor at Straits Substation	N/A	2010	2010	2
relieve overloads or low voltages under contingency (B2)	Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	N/A	2012	2010	2
relieve overloads or low voltages under contingency (69B2)	Uprate Y-61 McCue-Lamar 69-kV line to achieve 300 deg F line ratings and install 2-12.45 Mvar 69-kV capacitor banks at Lamar Substation	24.9	2008	2010	3
relieve overloads or low voltages under contingency (B2)	Uprate the Royster Substation terminals	N/A	2010	2010	3
relieve overloads or low voltages under contingency (69B2)	Uprate Y-61 Sheepskin-Dana 69-kV line to 95 MVA	N/A	2017	2010	3
relieve overloads or low voltages under contingency (B2, 69B2)	Uprate Y-40 Gran Grae-Boscobel 69-kV line to achieve a 99 MVA summer emergency rating*	N/A	2017	2010	3
T-D interconnection request	Construct a 138-kV bus at Pleasant Valley Substation to permit second distribution transformer interconnection	N/A	2010	2010	5
accommodate new generation	Expand 345-kV switchyard at Oak Creek to interconnect one new generator	N/A	2010	2010	5
relieve overloads or low voltages under contingency (69B2)	Upgrade McKenna 6.3 MVAR capacitor bank to 15.3 MVAR and upgrade Chaffee Creek 8.1 MVAR bank to 14.4 MVAR	29.7	2011	2011	1
relieve overloads or low voltages under contingency (A, 69B3)	Install 2-16.33 MVAR 69-kV capacitor banks at Spring Green Substation	32.66	2011	2011	3
relieve overloads or low voltages under contingency (A, C5)	Install 1-32.66 MVAR 138-kV capacitor bank at Femrite Substation	32.66	2011	2011	3
relieve overloads or low voltages under contingency (A, C5)	Install 1-32.66 MVAR 138-kV capacitor bank at Kegonsa Substation	32.66	2011	2011	3
relieve overloads or low voltages under contingency (69B2)	Uprate terminal limitations at McCue for the Y-79 McCue-Milton Lawns 69-kV line	N/A	2011	2011	35
relieve overloads or low voltages under contingency (69B2)	Relocate Engadine 69-kV load	N/A	2012	2012	2
relieve overloads or low voltages under contingency (C1)	Reconfigure Petenwell 138-kV bus	N/A	2013	2013	1

**Table PR-22  
Substation Equipment Additions and Replacements**

Identified need	Potential additions or replacements	Capacitor bank Capacity (MVAR)	System Need Year	Projected In-Service Year	Planning Zone
relieve overloads or low voltages under contingency (69B2)	Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	32.66	2006	2013	3
relieve overloads or low voltages under contingency (69B2)	Uprate Fitchburg-Nine Springs 69-kV and Royster-Pflaum 69-kV lines and move AGA load to the Royster-Femrite 69-kV line	N/A	2006	2013	3
relieve overloads or low voltages under contingency (69B2)	Uprate X-12 Town Line Road-Bass Creek 138-kV line to 300 deg F	N/A	2010	2013	3
relieve overloads or low voltages under contingency (B1)	Install power flow control at Straits 138-kV Substation	N/A	2010	2014	2
relieve overloads or low voltages under contingency (69B3)	Install 1-8.16 MVAR 138-kV capacitor banks at 18th Road	8.16	2014	2014	2
reliability (C1), operating flexibility	Upgrade 69-kV equipment at Delta Substation	N/A	2012	2012	2
relieve overloads or low voltages under contingency (B1)	Install 3-75 MVAR capacitor banks at Bluemound Substation	225	2012	2014	5
relieve overloads or low voltages under contingency (69B2)	Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	12.3	2015	2015	1
relieve overloads or low voltages under contingency (69B2, 69B3)	Uprate 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	N/A	2015	2015	3
relieve overloads or low voltages under contingency (B2)	Uprate Arcadian-Waukesha 138-kV lines KK9942/KK9962 (What the gens will they be available talk to WE)	N/A	2010	2015	5
relieve overloads or low voltages under contingency (69B2, 69B3)	Uprate Castle Rock-Mckenna 69-kV line	N/A	2016	2017	1
relieve overloads or low voltages under contingency (69B2)	Install 2-24.5 Mvar 138-kV capacitor bank and 1-18 Mvar 69-kV capacitor bank at Brick Church substation	67	2017	2017	35
relieve overloads or low voltages under contingency (69B2)	Reconfigure the North Randolph-Ripon 69-kV line to form a second Ripon-Metomen 69-kV line and retire the circuit between Metomen and the Mackford Prairie tap	N/A	2019	2018	1
relieve overloads or low voltages under contingency (69B2)	Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	N/A	2018	2018	3
relieve overloads or low voltages under contingency (A, B2, B3)	Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	16.33	2018	2018	3
relieve overloads or low voltages under contingency (B2)	Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	32.66	2018	2018	3

**Table PR-22  
Substation Equipment Additions and Replacements**

Identified need	Potential additions or replacements	Capacitor bank Capacity (MVAR)	System Need Year	Projected In-Service Year	Planning Zone
relieve overloads or low voltages under contingency (69B2)	Install 1-8.16 MVAR capacitor bank at Boscobel 69-kV Substation and upgrade existing 5.4 MVAR bank with an 8.16 MVAR bank	10.92	2019	2019	3
relieve overloads or low voltages under contingency (A, B2)	Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	32.66	2019	2019	3
relieve overloads or low voltages under contingency (B2)	Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	196	2021	2019	35
relieve overloads or low voltages under contingency (69B2)	Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	N/A	2021	2019	35
relieve overloads or low voltages under contingency (69B2)	Uprate Ripon-Northwest Ripon 69-kV line Y-93	N/A	2019	2019	1
relieve overloads or low voltages under contingency (69B2)	Uprate Winneconne-Sunset Point 69-kV line Y-103	N/A	2019	2019	1
reliability (69B2), asset renewal, potential T-D interconnection	Install 2-16.33 Mvar 69-kV capacitor banks at Dam Heights	32.66	2021	2019	31
relieve overloads or low voltages under contingency (69B2, 69B3)	Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	32.66	2020	2020	3
relieve overloads or low voltages under contingency (69B2)	Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	24.5	2020	2020	3
relieve overloads or low voltages under contingency (B2)	Upgrade Oak Creek-Pennsylvania 138-kV line	N/A	2021	2020	5
relieve overloads or low voltages under contingency (B2)	Install 2-32 Mvar capacitor banks at Mukwonago 138-kV Substation	64	2021	2020	5
relieve overloads or low voltages under contingency (69B2)	Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	N/A	2022	2022	31