

Table PR-14
Zone 1 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Upgrade McKenna 6.3 MVAR capacitor bank to 15.3 MVAR and upgrade Chaffee Creek 8.1 MVAR bank to 14.4 MVAR	2011	2011	1	reliability (69B2, 69B3)	Proposed
Construct 115-kV line from new Woodmin Substation to the Clear Lake Substation	2012	2012	1	T-D interconnection	Proposed
Reconfigure Petenwell 138-kV bus	2013	2013	1	reliability (C1), operating flexibility	Provisional
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	2013	2013	1	economics, reliability (A, B2, C3)	Proposed
Install a 161/138-kV transformer at Council Creek Substation	2013	2013	1	economics, reliability (A, B2, C3)	Proposed
Uprate Council Creek-Petenwell 138-kV line	2013	2013	1	economics, reliability (B2)	Proposed
Replace Petenwell 138/69-kV transformer	2015	2015	1	reliability (A, 69B2)	Provisional
Construct a 69-kV line from SW Ripon to the Ripon-Metomen 69-kV line	2015	2015	1	T-D interconnection	Provisional
Upgrade 4.1 MVAR capacitor bank to 8.2 MVAR and install a new 8.2 MVAR capacitor bank at Ripon 69-kV Substation	2015	2015	1	reliability (69B2)	Provisional
Replace existing 56 MVA Harrison 138/69-kV transformer with a 100 MVA transformer	2016	2016	1	reliability (A)	Provisional
Replace 138/69-kV transformer at Metomen Substation	2017	2017	1	reliability (A, 69B3)	Proposed

Table PR-14 (continued)
Zone 1 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Uprate Castle Rock-McKenna 69-kV line	2016	2017	1	reliability (69B2, 69B3)	Provisional
Install a second 138/69-kV transformer at Wautoma Substation	2018	2017	1	reliability (A, 69B2)	Provisional
Replace existing Caroline 115/69-kV transformer	2018	2018	1	reliability (69B3)	Provisional
Construct Fairwater-Mackford Prairie 69-kV line	2019	2018	1	reliability (69B2)	Provisional
Convert Necedah distribution substation from 69 kV to 138 kV	2018	2018	1	reliability (69B2, 69B3)	Provisional
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	2019	2018	1	reliability (69B2)	Provisional
Uprate Ripon-Northwest Ripon 69-kV line Y-93	2019	2019	1	reliability (69B2)	Provisional
Uprate Winneconne-Sunset Point 69-kV line Y-103	2019	2019	1	reliability (69B2)	Provisional

Table PR-15
Zone 2 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 2-8.0 MVAR capacitor bank at Indian Lake 69-kV Substation	2010	2010	2	reliability (B1)	Proposed
Install reactor at Straits Substation	2010	2010	2	reliability (B1)	Proposed
Install second 138/69-kV transformer and a 138-kV ring bus at Chandler Substation	2012	2012	2	reliability (69B3)	Proposed
Relocate Engadine 69-kV load	2012	2012	2	reliability (69B2)	Provisional
Upgrade 69-kV equipment at Delta Substation	2012	2012	2	reliability (C1), operating flexibility	Proposed
Energize Hiawatha-Indian Lake at 138 kV	2014	2014	2	reliability (B2)	Provisional
Install power flow control at Straits 138-kV Substation	2010	2014	2	reliability (B1)	Provisional

Table PR-15 (continued)
Zone 2 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	2012	2014	2	reliability (B2)	Proposed
Rebuild Straits-Pine River lines 6904/5 for 138 kV and operate at 69 kV	2014	2014	2	reliability (B2)	Proposed
Uprate Munising-Seney-Blaney Park 69-kV line to 167 degrees F	2014	2014	2	reliability (69B2)	Provisional
Construct 18th Road-Chandler double circuit 138-kV lines and operate at 138/69	2014	2014	2	reliability (69B3)	Provisional
Construct 18th Road 138/69-kV Substation and install two 138/69-kV transformers	2014	2014	2	reliability (69B3)	Provisional
Install 1-8.16 MVAR 138-kV capacitor bank at 18th Road	2014	2014	2	reliability (69B3)	Provisional
Construct a new Arnold 345-kV Substation and install a 345/138-kV transformer	2015	2015	2	reliability (B1)	Provisional
Uprate Pine River-Nine Mile 69-kV line 6923 to 167 degrees F and Asset Renewal for 6921/3	2016	2016	2	reliability (69B2)	Proposed
Construct Gwinn-Forsyth second 69-kV line	2016	TBD	2	reliability (69B2)	Provisional
Increase ground clearance of M38-Atlantic 69-kV line from 120 to 167 degrees F and minimum asset renewal	2009	TBD	2	reliability (69B2)	Provisional

Table PR-16
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
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	2008	2010	3	reliability (69B2)	Planned
Uprate the Royster Substation terminals	2010	2010	3	reliability (B2)	Planned
Uprate Y-61 Sheepskin-Dana 69-kV line to 95 MVA	2017	2010	3	reliability (69B2)	Planned
Uprate Y-40 Gran Grae-Boscobel 69-kV line to achieve a 99 MVA summer emergency rating*	2017	2010	3	reliability (B2, 69B2)	Planned
Replace two overhead Blount-Ruskin 69-kV lines with one underground 69-kV line	2010	2011	3	Completion of earlier project per agreement with the City of Madison	Planned
Install 2-16.33 MVAR 69-kV capacitor banks at Spring Green Substation	2011	2011	3	reliability (A, 69B3)	Planned
Install 1-32.66 MVAR 138-kV capacitor bank at Femrite Substation	2011	2011	3	reliability (A, C5)	Planned
Install 1-32.66 MVAR 138-kV capacitor bank at Kegonsa Substation	2011	2011	3	reliability (A, C5)	Planned
Rebuild Y-33 Brodhead to South Monroe 69-kV line	2011	2011	3	reliability (B2, 69B2, 69B3)	Planned
Uprate terminal limitations at McCue for the Y-79 McCue-Milton Lawns 69-kV line	2011	2011	3	reliability (69B2)	Proposed
Rebuild part of the Y-8 Dane-Dam Heights 69-kV line*	2015	2012	3	reliability, asset renewal, potential T-D interconnection	Planned

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	2006	2013	3	reliability (69B2)	Proposed
Uprate Fitchburg-Nine Springs 69-kV and Royster-Pflaum 69-kV lines and move AGA load to the Royster-Femrite 69-kV line	2006	2013	3	reliability (69B2)	Proposed
Install a 138/69-kV transformer at Bass Creek Substation	2010	2013	3	reliability (69B2)	Planned
Uprate X-12 Town Line Road-Bass Creek 138-kV line to 300 deg F	2010	2013	3	reliability (69B2)	Planned
Construct 345-kV line from Rockdale to West Middleton	2013	2013	3	reliability (B2, C5)	Planned
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at West Middleton Substation	2013	2013	3	reliability (B2, C5)	Planned
Rebuild the Y-119 Verona to Oregon 69-kV line	2008	2014	3	reliability, condition (69B3, 69C3)	Proposed
Uprate 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	2015	2015	3	reliability (69B2, 69B3)	Provisional

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	2016	2016	3	reliability (69B2)	Proposed
Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	2016	2016	3	reliability (69B2), T-D interconnection	Proposed
Construct 69-kV double-circuit line between McCue and Lamar substations	2017	2017	3	reliability (A, 69B2), economics	Provisional
Install 2-24.5 MVAR 138-kV capacitor bank and 1-18 MVAR 69-kV capacitor bank at Brick Church substation	2017	2017	3	reliability (69B2)	Provisional
Rebuild Y-32 Colley Road-Brick Church 69-kV line	2013	2018	3	reliability (B2, 69B3, 69C5, C3) condition	Provisional
Install a second 100 MVA 138/69 kV transformer at Hillman Substation	2018	2018	3	reliability (69B2, 69B3)	Provisional
Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	2018	2018	3	reliability (69B3)	Provisional
Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	2018	2018	3	reliability (69B2)	Provisional
Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	2018	2018	3	reliability (A, B2, B3)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at North Monroe	2018	2018	3	reliability (B2)	Provisional
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2018	2018	3 & 5	T-D interconnection, reliability (69B2)	Provisional

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
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	2019	2019	3	reliability (69B2)	Provisional
Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	2019	2019	3	reliability (69B3)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	2019	2019	3	reliability (A, B2)	Provisional
Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	2021	2019	3	reliability (B2)	Provisional
Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	2021	2019	3	reliability (69B2)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Dam Heights	2021	2019	3	reliability (69B2), asset renewal, potential T-D interconnection	Provisional
Construct Cardinal-Blount 138-kV line	2020	2020	3	reliability (C5)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Sun Prairie	2020	2020	3	reliability (69B2, 69B3)	Provisional
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	2020	2020	3	reliability (69B2)	Provisional
Construct a Lake Delton-Birchwood 138-kV line	2022	2020	3	reliability (B2)	Provisional
Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	2022	2022	3	reliability (69B2)	Provisional

Table PR-16 (continued)
Zone 3 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct a Hubbard-East Beaver Dam 138-kV line	2022	2022	3	reliability (B2)	Provisional
Construct a 345-kV bus, install a 345/138-kV 500 MVA transformer at North Randolph and loop the Columbia to South Fond Du Lac 345-kV line into the substation	2025	2025	3	reliability (B2)	Provisional
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	TBD	TBD	3	reliability (B3)	Provisional

Table PR-17
Zone 4 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Rebuild 2.37 miles of 69 kV from Sunset Point to Pearl Ave with 477 ACSR	2011	2011	4	reliability (69B2, 69B3)	Planned
Reconfigure Kewaunee 345/138-kV switchyard and install a second 500 MVA 345/138-kV transformer	2011	2011	4	reliability (C3), condition	Proposed
Construct Canal-Dunn Road 138-kV line	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Proposed
Install 100 MVA 138/69-kV transformer at Dunn Road	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Proposed
Construct second Dunn Road-Egg Harbor 69-kV line	2018	2018	4	reliability (69B2)	Provisional
Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	2020	2020	4	reliability (69B3)	Provisional
Construct Shoto to Custer 138-kV line	2022	2022	4	reliability (69B2, 69B3)	Provisional
Install 138/69-kV transformer at Custer Substation	2022	2022	4	reliability (69B2, 69B3)	Provisional
Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	2024	2024	4	reliability (69B3)	Provisional

Table PR-18
Zone 5 Transmission System Additions

System Additions	System Need Year	Projected In-Service Year	Planning Zone	Need Category	Planned, Proposed or Provisional
Construct a 138-kV bus at Pleasant Valley Substation to permit second distribution transformer interconnection	2010	2010	5	T-D interconnection	Planned
Expand 345-kV switchyard at Oak Creek to interconnect one new generator	2010	2010	5	new generation	Planned
Construct second Shorewood-Humboldt 138-kV underground cable*	2012	2010	5	reliability (B2)	Proposed
Install 3-75 MVAR capacitor banks at Bluemound Substation	2012	2014	5	reliability (B1)	Provisional
Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	2010	2015	5	reliability (B3)	Provisional
Uprate Arcadian-Waukesha 138-kV lines KK9942/KK9962	2010	2015	5	reliability (B2)	Provisional
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2018	2018	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Upgrade Oak Creek-Pennsylvania 138-kV line	2021	2020	5	reliability (B2)	Provisional
Install 2-32 MVAR capacitor banks at Mukwonago 138-kV Substation	2021	2020	5	reliability (B2)	Provisional
Reconductor Ramsey-Harbor 138-kV line	TBD	TBD	5	reliability	Provisional