

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	Planned
Construct Monroe County-Council Creek 161-kV line and Timberwolf 69-kV switching station	2013	2014	1	economics, reliability (B2, C3)	Proposed
Install a 161/138-kV transformer at Council Creek Substation	2013	2014	1	economics, reliability (B2, C3)	Proposed
Uprate Council Creek-Petenwell 138-kV line	2013	2014	1	economics, reliability (B2)	Proposed
Reconfigure Petenwell 138-kV bus	2011	2015	1	operating flexibility	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	>2026	2015	1	reliability (69B2)	Provisional
Replace Petenwell 138/69-kV transformer	2018	2015	1	reliability (A, 69B2)	Provisional
Replace existing 56 MVA Harrison 138/69-kV transformer with a 100 MVA transformer	>2026	2016	1	reliability (A)	Provisional
Replace 138/69-kV transformer at Metomen Substation	2017	2017	1	reliability (A, 69B3)	Proposed
Uprate Castle Rock-Mckenna 69-kV line	2024	2017	1	reliability (69B2, 69B3)	Provisional
Construct Fairwater-Mackford Prairie 69-kV line	>2026	2017	1	economics, reliability (69B2)	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	>2026	2017	1	economics, reliability (69B2)	Provisional
Install a second 138/69-kV transformer at Wautoma Substation	>2026	2018	1	reliability (A, 69B2)	Provisional
Convert Necedah distribution substation from 69 kV to 138 kV	>2026	2018	1	reliability (69B2, 69B3)	Provisional
Replace existing Caroline 115/69-kV transformer	>2026	2018	1	reliability (69B3)	Provisional
Uprate Winneconne-Sunset Point 69-kV line Y-103	>2026	2019	1	reliability (69B2)	Provisional
Uprate Ripon-Northwest Ripon 69-kV line Y-93	>2026	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 69-kV bus tie breaker at Delta Substation	2011	2011	2	reliability (C1), operating flexibility	Proposed
Uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings	2012	2012	2	reliability (B2)	Proposed
Install second 138/69-kV transformer and a 138-kV ring bus at Chandler Substation	2012	2012	2	reliability (69B3)	Proposed
Replace five 69-kV breakers at Delta Substation	2012	2012	2	stability, operating flexibility	Proposed
Relocate Engadine 69-kV load	2011	2012	2	reliability (69B2)	Proposed
Rebuild M38-Atlantic 69-kV line	2011	2013	2	reliability (69B2)	Planned
Rebuild Straits-Pine River lines 6904/5 for 138 kV and operate at 69 kV	2014	2014	2	reliability (B2)	Proposed
Install power flow control at Straits 138-kV Substation	2010	2014	2	reliability (B1)	Proposed
Energize Hiawatha-Indian Lake at 138 kV	2014	2014	2	reliability (B2)	Proposed
Uprate Munising-Seney-Blanney 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), economics	Proposed
Construct 18th Road 138/69-kV Substation and install two 138/69-kV transformers	2014	2014	2	reliability (69B3)	Proposed
Install 1-8.16 MVAR 69-kV capacitor banks at 18th Road	2014	2014	2	reliability (69B3)	Proposed
Construct a new Arnold 345-kV Substation and install a 345/138-kV transformer	2015	2015	2	reliability (B1)	Proposed
Uprate Pine River-Nine Mile 69-kV line 6923 to 167 degrees F and asset renewal for 6921/3	2016	2016	2	reliability (69B2), condition	Proposed

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
Rebuild Y-33 Brodhead to South Monroe 69-kV line	2011*	2011	3	reliability (B2, 69B2, 69B3)	Planned
Rebuild part of the Y-8 Dane-Dam Heights 69-kV line*	>2026	2012	3	reliability, asset renewal, potential T-D interconnection	Planned
Construct 345-kV line from Rockdale to Cardinal	2013*	2013	3	reliability (B2, C5)	Planned
Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at Cardinal Substation	2013*	2013	3	reliability (B2, C5)	Planned
Install 2-16.33 MVAR 69-kV capacitor banks at Nine Springs Substation	2008*	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	2008*	2013	3	reliability (69B2)	Proposed
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	>2026	2015	3	reliability (69B2)	Provisional
Uprate 6927 West Middleton-Stage Coach 69-kV line to 106 MVA SE	>2026	2015	3	reliability (69B2, 69B3)	Provisional
Install 2-24.5 Mvar 138-kV capacitor bank and 1-18 Mvar 69-kV capacitor bank at Brick Church substation	>2026	2017	3	reliability (69B2)	Provisional
Uprate the 6986 Royster to Sycamore 69-kV line to 115 MVA	2018	2018	3	reliability (69B3)	Provisional
Install a second 100 MVA 138/69 kV transformer at Hillman Substation	>2026	2018	3	reliability (69B2, 69B3)	Provisional
Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	>2026	2018	3	reliability (69B3)	Provisional
Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	>2026	2018	3	reliability (69B2)	Provisional
Construct Badger Coulee 345-kV line	2018	2018	3	policy benefits	Proposed

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	>2026	2018	3	reliability (69B2)	Provisional
Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation	>2026	2018	3	reliability (69B2), T-D interconnection	Provisional
Rebuild Y-32 Colley Road-Brick Church 69-kV line	>2026	2018	3	reliability (B2, 69B3, 69C5, C3) condition	Provisional
Construct 69-kV double-circuit line between McCue and Lamar substations	>2026	2019	3	reliability (A, 69B2)	Provisional
Install 2-16.33 MVAR 69-kV capacitor banks at Eden Substation	>2026	2019	3	reliability (A, B2)	Provisional
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	2019	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at Dam Heights	>2026	2019	3	reliability (69B2)	Provisional
Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	>2026	2020	3	reliability, condition (69B3, 69C3)	Provisional
Construct Dubuque-Spring Green-Cardinal 345-kV line	2020	2020	3	policy benefits	Provisional
Construct Cardinal-Blount 138-kV line	>2026	2020	3	reliability (C5)	Provisional
Install 4-49 MVAR 138-kV capacitor banks at Concord Substation	>2026	2020	3	reliability (B2)	Provisional
Construct a Lake Delton-Birchwood 138-kV line	>2026	2020	3	reliability (B2)	Provisional
Install 2-16.33 Mvar 69-kV capacitor banks at North Monroe	>2026	2021	3	reliability (B2)	Provisional
Install 1-16.33 MVAR 69-kV capacitor bank at Verona Substation	>2026	2021	3	reliability (A, B2, B3)	Provisional
Uprate Y159 Brick Church-Walworth 69-kV line to 115 MVA	>2026	2021	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
Install 2-16.33 Mvar 69-kV capacitor banks at Sun Prairie	>2026	2022	3	reliability (69B2, 69B3)	Provisional
Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	2022	2022	3	reliability (69B2)	Provisional
Construct a Hubbard-East Beaver Dam 138-kV line	>2026	2022	3	reliability (B2)	Provisional
Uprate X-67 Portage-Trienda 138-kV line to 373 MVA	>2026	2022	3	reliability (69B2)	Provisional
Install 2-12.25 MVAR 69-kV capacitor banks at Mazomanie Substation	>2026	2023	3	reliability (69B2)	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	>2026	2025	3	reliability (B2)	Provisional
Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	>2026	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	2012	4	reliability (69B2, 69B3)	Planned
Construct Canal-Dunn Road 138-kV line	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Install 100 MVA 138/69-kV transformer at Dunn Road	2012	2012	4	reliability (69A, 69B2, 69B3, 69C3)	Planned
Convert Forest Junction - Howards Grove and a portion of the Howards Grove - Holland 138-kV circuits to 345-kV	2018	2018	4	new generation	Proposed
Barnhart Substation: Construct new 345/138-kV substation with new 500 MVA 345/138-kV transformer	2018	2018	4	new generation	Proposed
Branch River Substation: Construct new 345-kV switching station	2018	2018	4	new generation	Proposed
Uprate the Edgewater-Cedarsauk 345-kV circuit	2018	2018	4	new generation	Proposed
Construct a new Barnhart - Plymouth - Howards Grove - Erdman 138-kV circuit	2018	2018	4	new generation	Proposed
Point Beach Substation: Install new series 345-kV breaker for circuit Q-303	2018	2018	4	new generation	Proposed
Construct second Dunn Road-Egg Harbor 69-kV line	>2026	2021	4	reliability (69B2)	Provisional
Construct Shoto to Custer 138-kV line	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Install 138/69-kV transformer at Custer Substation	>2026	2022	4	reliability (69B2, 69B3)	Provisional
Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	>2026	2024	4	reliability (69B3)	Provisional
Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	>2026	2025	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
Rebuild Pleasant Prairie 345-kV bus	2013	2013	5	operating flexibility	Proposed
Construct Pleasant Prairie-Zion Energy Center 345-kV line	2017	2014	5	economics	Proposed
Install 3-75 MVAR capacitor banks at Bluemound Substation	>2026	2015	5	reliability (B1)	Provisional
Construct 138-kV lines to serve Milwaukee County T-D interconnection	2015	2015	5	T-D interconnection	Proposed
Rebuild Arcadian-Waukesha 138-kV lines KK9942/KK9962	2016	2016	5	reliability (B2)	Proposed
Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line	2019	2019	3 & 5	T-D interconnection, reliability (69B2)	Provisional
Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	2023	2020	5	reliability (B3)	Provisional
Uprate Oak Creek-Bluemound 230-kV line	2021	2021	5	operating flexibility	Provisional
Upgrade Oak Creek-Pennsylvania 138-kV line	>2026	2022	5	reliability (B2)	Provisional
Reconductor Harbor-Kansas 138-kV line	2021	TBD	5	reliability	Provisional