

**Table PR-21
New Substations, Transformer Additions and Replacements**

Identified need	Potential additions or replacements	Transformer Capacity (MVA)		System need year	Projected In-service year	Planning zone
		Install	Replace			
accommodate new generation	Construct Butler Ridge 138-kV Substation	N/A	N/A	2008	2008	3
relieve overloads under contingency	Install 138/69-kV transformer at the expanded Menominee Substation	100	N/A	2008	2008	4
reduce service limitations, relieve overloads under contingency, improve transfer capability and Weston stability	Construct new Hwy 22 345-kV Substation	N/A	N/A	2009	2009	1
relieve overloads under contingency, replace aging facilities	Relocate Cedar Substation (North Lake)	N/A	N/A	2005	2009	2
relieve overloads under contingency	Construct a new 138/69-kV substation near Huiskamp and install a 138/69-kV transformer with a 187 MVA summer emergency rating	187	N/A	2008	2009	3
accommodate new generation	Relocate Mishicot 138-kV Substation	N/A	N/A	2009	2009	4
accommodate new generation	Install second 500 MVA 345/138-kV transformer at Oak Creek Substation	500	N/A	2009	2009	5
T-D interconnection request	Construct a 138-kV bus at Hale Substation to permit third Brookdale distribution transformer interconnection	N/A	N/A	2009	2009	5
relieve overloads under contingency, transfer capability	Construct 138 kV bus and install a 138/69 kV, 60 MVA transformer at Iron Grove Substation	60	N/A	2010	2010	2
relieve overloads under contingency	Construct 138 kV bus and install a 138/69 kV, 60 MVA transformer at Aspen Substation	60	N/A	2010	2010	2
relieve overloads under contingency	Relocate Iron River Substation (Iron Grove)	N/A	N/A	2010	2010	2
relieve overloads or low voltages under contingency, replace aging facilities	Reconfigure Kewaunee 345/138-kV switchyard and install a second 500 MVA 345/138-kV transformer	500	0	2011	2011	4
relieve overloads under contingency	Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	500	672	2010	2011	5
economics, relieve overloads under contingency	Install a 161/138-kV transformer at Council Creek Substation	100	N/A	2012	2012	1
relieve overloads under contingency	Install 60 MVA 138/69-kV transformer at Dunn Road	60	N/A	2012	2012	4
relieve overloads under contingency	Replace 138/69-kV transformer at Metomen Substation	100	47	2013	2013	1
relieve overloads under contingency	Install a 138/69-kV transformer at Bass Creek Substation	100	N/A	2010	2013	3

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		Install	Replace			
relieve overloads under contingency	Construct a 345-kV bus and install a 345/138 kV 500 MVA transformer at West Middleton Substation	500	0	2013	2013	3
relieve overloads under contingency	Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	100	0	2013	2013	3
relieve overloads under contingency	Construct new 138-kV bus and install a 138/69-kV 100 MVA transformer at South Lake Geneva Substation	100	0	2014	2014	3
relieve overloads under contingency	Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers	200	116	2014	2014	4
relieve overloads under contingency	Construct a 345-kV bus at Bain Substation	N/A	N/A	2008	2014	5
relieve overloads under contingency	Replace the existing 46 MVA Hillman 138/69-kV transformer with a 100 MVA transformer	47	0	2015	2015	3
relieve overloads under contingency	Uprate Columbia 345/138-kV transformer T-22 to 527 MVA	527	400	2015	2015	3
relieve overloads under contingency	Install a second 138/69-kV transformer at McCue Substation	100	0	2016	2016	3
relieve overloads under contingency, economics	Install 138/69-kV transformer at Custer Substation	100	N/A	2016	2016	4
relieve overloads under contingency	Install a second 138/69-kV transformer at Wautoma Substation	100	N/A	2017	2017	1
relieve overloads or low voltages under contingency	Uprate the summer emergency rating of the Forsyth 138/69-kV transformer to 57 MVA	57	48	2017	2017	2
relieve overloads under contingency	Convert Necedah distribution substation from 69 kV to 138 kV	N/A	N/A	2018	2018	1
relieve overloads under contingency	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	500	N/A	2018	2018	3
relieve overloads under contingency	Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	200	142	2018	2018	4