



New transmission lines shown are for illustrative purposes only. They do not necessarily depict proposed routes.

Key	
	Existing Transmission Lines
	Flowgate Contingent Element - Outaged Element
	Flowgate Monitored Element or Limiting Element
	Future Project to Relieve Chronic Limiters

2004 Chronic Limiter Key

1. Turkey River - Cassville 161 kV for the loss of Wempletown - Paddock 345 kV.
2. Zion - Pleasant Prairie 345 kV for the loss of Wempletown - Paddock 345 kV.
3. Lore - Turkey River 161 kV for the loss of Wempletown - Paddock 345 kV.
4. Albers - Paris 138 kV for the loss of Wempletown - Paddock 345 kV.
5. Paddock 345/138 kV Transformer for the loss of Paddock - Rockdale 345 kV.
6. Zion - Pleasant Prairie 345 kV for the loss of Zion - Arcadian 345 kV.
7. Cassville - Nelson Dewey 161 kV for the loss of Wempletown - Paddock 345 kV.
8. Center - Fiebrantz 138 kV for the loss of Zion - Arcadian 345 kV (Operating Guide).
9. T-Corners - Wien 115 kV for the loss of Eau Claire - Arpin 345 kV (Operating Guide).
10. Eau Claire - Arpin 345 kV.
11. Wisconsin - Michigan Upper Peninsula Interface.
12. Wisconsin - Michigan Upper Peninsula Interface.
13. Pleasant Prairie - Racine 345 kV for the loss of Wempletown - Paddock 345 kV.
14. Lore - Turkey River 161 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
15. Center - Fiebrantz 138 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
16. Russell - Rockdale 138 kV for the loss of Paddock - Rockdale 345 kV.
17. Turkey River - Cassville 161 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
18. Amberg - Plains 138 kV for the loss of Morgan - Plains 345 kV.
19. McGulpin - Straits 138 kV Circuit #1 for the loss of McGulpin - Straits 138 kV Circuit #3.
20. Zion - Arcadian 345 kV for the loss of Zion - Pleasant Prairie 345 kV.

Chronic Limter Solution Key		
Project to be Constructed to Alleviate Chronic Limiters	Estimated In-Service Year and Cost	Chronic Limter to be Relieved
A. Construct second Wempletown - Paddock 345 kV Circuit.	2005 - \$5.4 Million	#1, #2, #3, #4, #7, #13, #14, #15 and #17
B. Install a second Paddock 345/138 kV Transformer and construct a second Paddock - Town Line Road 138 kV Circuit.	Strategic Project - 2010 \$10.8 Million	#5
C. Install a 4.5 Ohm reactor in series with the Cornell - Fiebrantz - Center 138 kV line.	Strategic Project - 2005-06 \$1 Million	#8 and #15
D. Construct the Arrowhead - Gardner Park 345 kV line.	2008 - \$420.3 Million	#9 and #10
E. Rebuild Cranberry - Conover - Plains to 138 kV. Rebuild the Stiles - Amberg - Plains 138 kV circuits and rebuild West Marinette - Amberg to 138 kV.	2008 - \$35.5 Million 2005-06 - \$47.9 Million	#11, #12 and #18
F. Reconnector Russell - Rockdale 138 kV.	Completed in February, 2004.	#16
G. Install a third Straits - McGulpin 138 kV UG Cable.	Strategic Project - 2011 No Cost Estimate is available at this time.	#19
H. MISO Flowgate Methodology Change.	2005 - No Associated Cost	#6 and #20