

Congestion Severity Index

The lists on the following tabs are sorted by the Congestion Severity Index of the constraints. The Congestion Severity Index is based on the theoretical potential maximum number of dollars paid into the market by load serving entities due to congestion on the constraint in question. It is the maximum potential amount of money (in millions of dollars) that could have been saved over the course of this time period had the constraint not been bound. Both directions of the constraint are captured (there are a few constraints in ATC that have been bound in different directions at different times).

Hours

The "hours" measurements provided on the table is a measure duration of constraint binding. The number given is the total number of "hours" that the constraint occurred. RT data may have partial hours since RT constraints are bound in five minute intervals.

Day Ahead and Real Time

Day Ahead (DA) constraints indicate that MISO committed generation out of economic order in the Day Ahead market, meaning that more expensive generation is committed for the next day in order to avoid constraints that would occur if only the cheapest generation was scheduled to run. Real Time (RT) constraints show up when MISO did not anticipate overloads on the system in the Day Ahead market. Adjustments must be made to the generation mix during the operating day in order to mitigate constraints.

Potential Solution

Potential solutions have been provided for some constraints listed. These solutions may not have been designed for the sole purpose of alleviating the listed constraints and therefore will not necessarily fully mitigate the constraints, but will reduce the constraint's frequency and severity under normal operating conditions.

Severity Index	Hours	Constraint	Potential Solution
8.18	720	Total for all ATC Day Ahead constraints - June 2011	Solutions listed in ATC TYA unless otherwise noted
2.69	112	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Proposed, 2013) North La Crosse - Madison 345 kV line (Proposed 2018)
1.63	139	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.65	24	Pleasant Prairie - Zion 345 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.65	24	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2011)
0.58	17	Arcadian - Waukesha 138 kV flo Arcadian - Granville 345 kV	Rebuild Arcadian - Waukesha 138 kV lines KK9942 and KK9962 (Proposed, 2016)
0.44	10	Arcadian 345/138 kV Transformer T2 flo Arcadian 345/138 kV Transformer T1	Replace Arcadian Transformers T2 and T3 (Provisional 2020)
0.37	18	Nicholson - Ramsey 138 kV flo Oak Creek - Pennsylvania 138 kV	Area Generation may have contributed to this constraint
0.28	155	Nordic - Felch Tap 69 kV flo Chandler 138/69 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) Flow Control Device (Proposed, 2014) Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.25	17	Kansas - Harbor 138 kV flo Kansas - Norwich 138 kV	Area Generation may have contributed to this constraint
0.19	94	Flow South PTDF	Flow Control Device (Proposed, 2014)
0.12	20	Stiles - Pulliam 138 kV (64441) flo Highway 22 - Morgan 345 kV	Area Transmission outage may have contributed to this constraint
0.09	4	Cassel - Sunnysvale 115 kV flo Eau Claire - Arpin 345 kV + Op. Guide	
0.06	3	Edgewood - St. Martins 138 kV flo Paddock 345/138 kV Transformer	Area Transmission outage may have contributed to this constraint
0.05	5	Rockdale 345/138 kV Transformer T21 flo Werner West - Rocky Run 345 kV	Rockdale - West Middleton 345 kV (Planned 2013)
0.05	8	Indian Lake 138/69 kV Transformer T2 flo Indian Lake 138/69 kV Transformer T1	Flow Control Device (Proposed, 2014) Indian Lake - Hiawatha 138kV line (Proposed, 2014)
0.03	1	Lakeview - Zion 138 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.03	4	Stiles - Pulliam 138 kV (64451) flo Highway 22 - Morgan 345 kV	Area Transmission outage may have contributed to this constraint
0.02	9	North East - Revere Drive 69 kV flo Manrap - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.00	1	Nordic 138/69 kV Transformer T8 flo Armory - Big Quin Falls 69 kV	ATC Michigan Energy Collaborative investigating potential solutions (2011)*
0.00	2	Hiawatha - Roberts 69 kV	Pine River-Straits 69kV rebuild (Proposed 2014) Flow Control Device (Proposed, 2014)
0.00	2	Straits 138/69 kV Transformer T1 flo Straits - Hiawatha 138 kV + Hiawatha 138/69 kV Transf	Flow Control Device (Proposed, 2014)
0.00	3	McGulpin - Straits 138 kV ckt 3 flo McGulpin - Straits 138 kV ckt 1	Flow Control Device (Proposed, 2014)
0.00	1	M38 - Atlantic 138 kV	ATC Michigan Energy Collaborative investigating potential solutions (2011)*
0.00	4	Western UP Import (North Lake - M 38 ; Bruce Crossings Line)	ATC Michigan Energy Collaborative investigating potential solutions (2011)*
0.00	1	Chandler - Cornell 69 kV flo Chandler 138/69 kV Transformer T1	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	42	Manistique Transformer T1	No solution - virtual activity causing congestion

* This project not part of the ATC 10-Year Assessment

1. This constraint may have been bound for other contingencies as well.

Severity Index	Hours	Constraint	Potential Solution
3.67	114	Total for all ATC Real Time constraints - June 2011	Solutions listed in ATC TYA unless otherwise noted
1.29	22	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
1.03	15	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2011)
0.31	3	Indian Lake 138/69 kV Transformer T2 flo Indian Lake 138/69 kV Transformer T1	Flow Control Device (Proposed, 2014) Indian Lake - Hiawatha 138kV line (Proposed, 2014)
0.26	7	Rocky Run 345/115 kV Transformer T1 flo Werner West - Rocky Run 345 kV	Monroe County - Coucil Creek 161 kV line (Proposed, 2013)
0.23	40	Nordic - Felch Tap 69 kV flo Chandler 138/69 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) Flow Control Device (Proposed, 2014) Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.21	7	Kansas - Harbor 138 kV flo Kansas - Norwich 138 kV	Area Generation may have contributed to this constraint
0.13	7	Lakeview - Zion 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.06	1	Gran Grae - Boscobel 69 kV flo Nelson Dewey - Hillman 138 kV	Uprate Y-40 Gran Grae-Boscobel 69-kV line (Provisional 2012)
0.05	2	Nelson Dewey - Glen Haven Tap 69 kV flo Nelson Dewey 138/115 kV Transformer T91	Area Generation may have contributed to this constraint
0.04	1	Kilbourn 138/69 kV Transformer T32 flo Kilbourn 138/69 kV Transformer T31	
0.03	9	Watson Tap - Forsyth 69 kV flo Chandler 138/69 kV Transformer T1	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	0	Stiles - Pulliam 138 kV (64451) flo Highway 22 - Morgan 345 kV	Area Transmission outage may have contributed to this constraint
0.00	0	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Proposed, 2013) North La Crosse - Madison 345 kV line (Proposed 2018)

* This project not part of the ATC 10-Year Assessment

1. This constraint may have been bound for other contingencies as well.



