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
6.50	**642**	**Total for all ATC Day Ahead constraints - August 2011**	**Solutions listed in ATC TYA unless otherwise noted**
4.99	289	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.60	194	Flow South PTDF	Flow Control Device (Proposed, 2014)
0.50	28	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2011)
0.16	39	Lakeview - Zion 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.15	18	Stiles - Pulliam 138 kV (64441) flo Morgan - Plains 345 kV	Area transmission outages may have contributed to this constraint
0.05	7	Forest Junction - Cypress 345 kV flo Sheboygan - Granville 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.04	3	North Appleton - Werner West 345 kV flo Weston Unit 4	Area transmission outages may have contributed to this constraint
0.00	6	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)
0.00	4	Rock River - Turtle 69 kV	
0.00	17	Rock River 138/69 kV Transformer T42	
0.00	1	Kelly - Bunker Hill 115 kV flo Gardner Park - Blackbrook - Aurora 115 kV	
0.00	3	Chandler 138/69 kV Transformer T1 flo Plains 345/138 kV Transformer TR1[1]	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	1	Nine Mile - Kincheloe Main Tap 69 kV flo Hiawatha - Roberts 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016)
0.00	1	Pine - Grandfather Falls 115 kV	
0.00	28	Detour Transformer T2	No solution - virtual activity causing congestion
0.00	3	Weston Unit G31 Output	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
13.03	**180**	**Total for all ATC Real Time constraints - August 2011**	**Solutions listed in ATC TYA unless otherwise noted**
5.53	94	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
3.24	9	North Appleton - Werner West 345 kV flo Weston Unit 4	Area transmission outages may have contributed to this constraint
1.96	18	Morrison Avenue - Sherman Street 115 kV flo Gardner Park - Hilltop 115 kV	Area transmission outages may have contributed to this constraint
1.03	27	Lakeview - Zion 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.46	6	Stiles - Pulliam 138 kV (64441) flo Morgan - Plains 345 kV	Area transmission outages may have contributed to this constraint
0.37	3	North Appleton - Werner West 345 kV flo Sherburne County Units	Area transmission outages may have contributed to this constraint
0.14	3	Forest Junction - Arcadian 345 kV flo Sheboygan Falls - Granville 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.11	9	Woodenshoe - Mears Corners 138 kV flo Fitzgerald 345/138 kV Transformer T1	Area transmission outages may have contributed to this constraint
0.10	3	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2011)
0.05	1	Stiles - Pulliam 138 kV (64451) flo Highway 22 - Morgan 345 kV	Area transmission outages may have contributed to this constraint
0.03	4	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)
0.00	0	Saukville - Edgewater 345 kV flo Point Beach - Sheboygan Energy Center 345 kV (L111+SP	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.00	1	Manrap - Custer 69 kV flo North East - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional, 2022)

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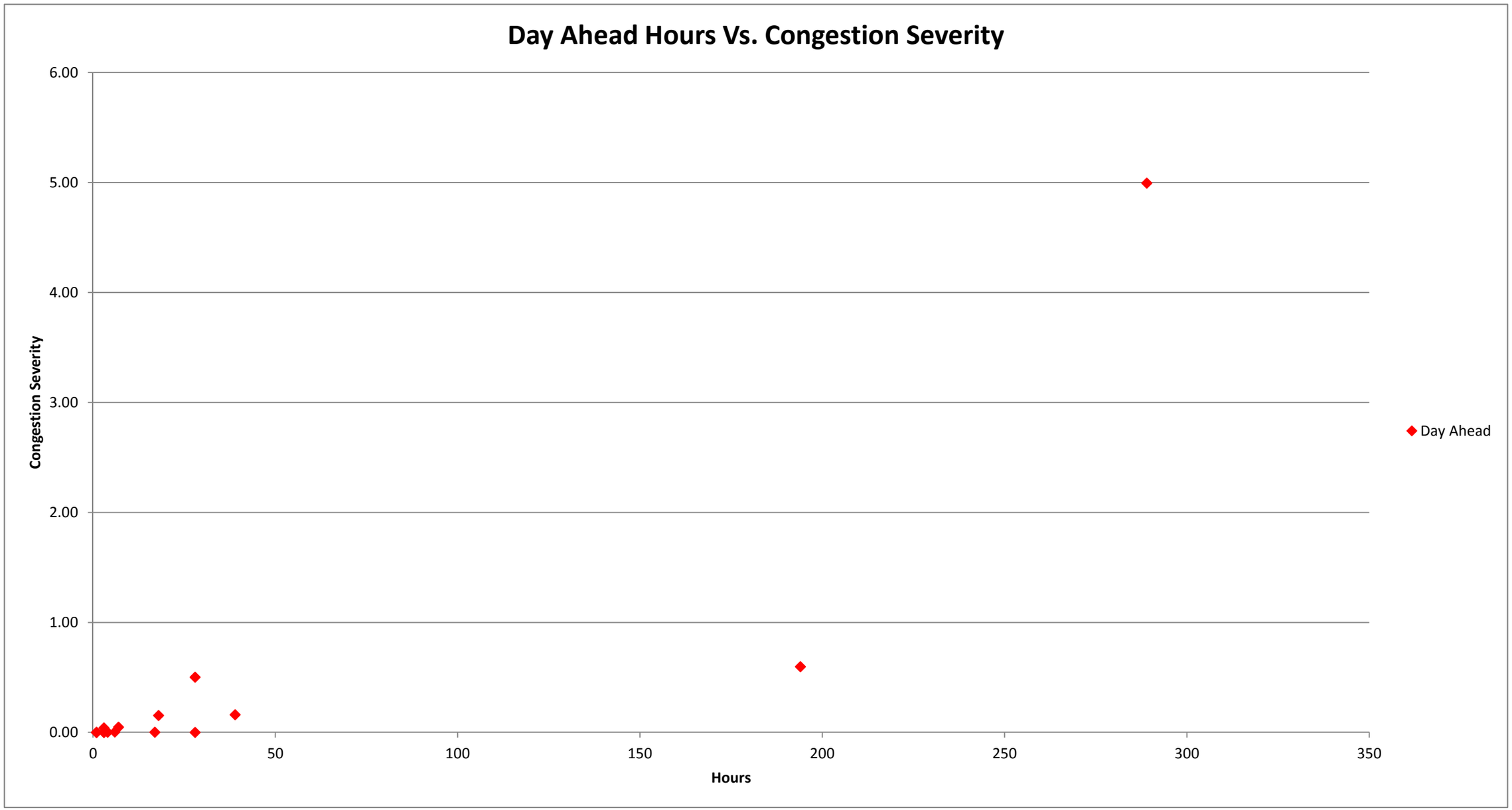
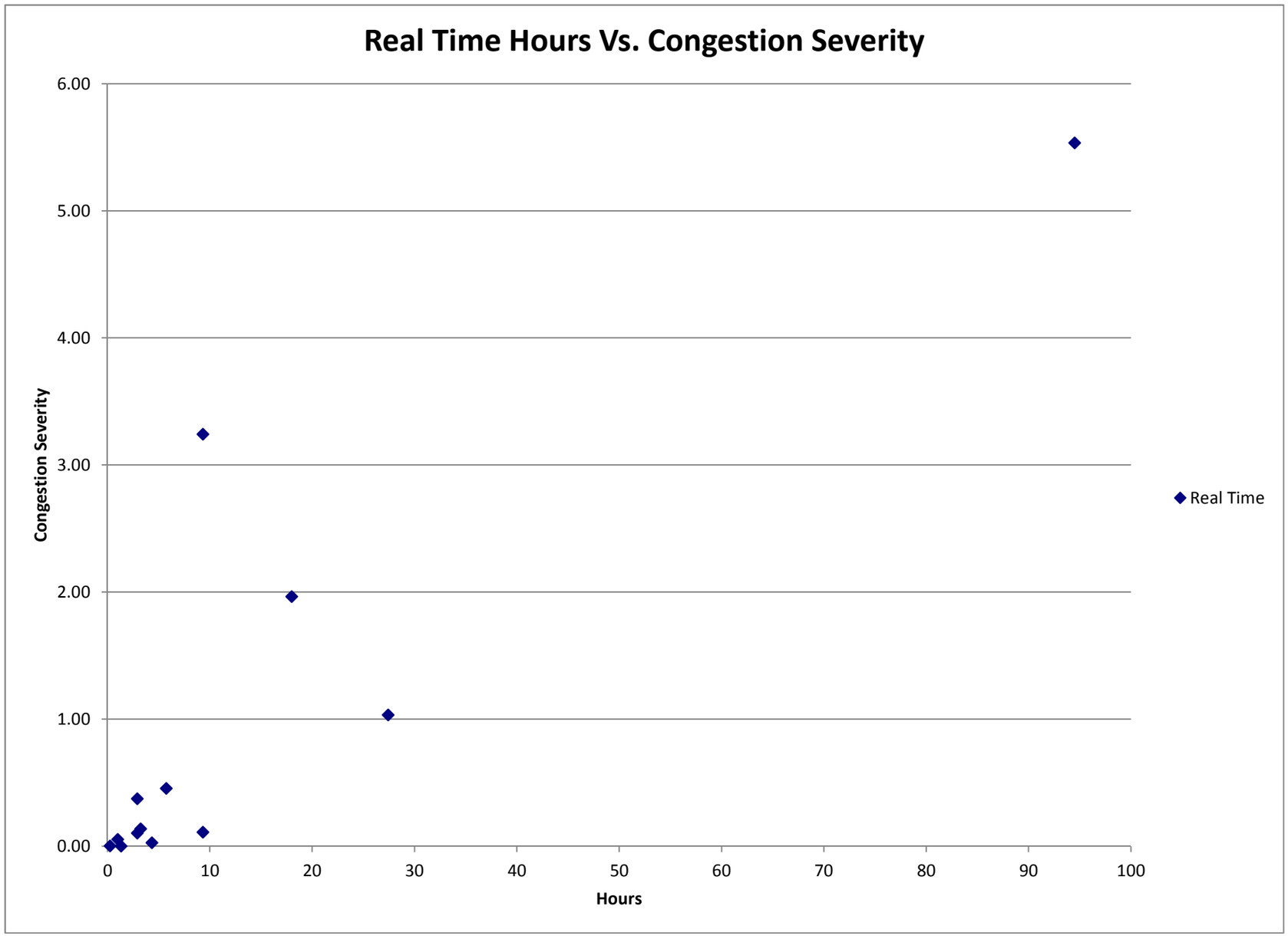
1. This constraint may have been bound for other contingencies as well.


Day Ahead Hours Vs. Congestion Severity
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Congestion Severity
0
50
100
150
200
250
300
350
Hours
Day Ahead


Real Time Hours Vs. Congestion Severity
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Congestion Severity
0
10
20
30
40
50
60
70
80
90
100
Hours
Real Time