

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
91.27	11,202	Total for all ATC Day Ahead constraints 1-1-2011 thru 12-31-2011	Solutions listed in ATC TYA unless otherwise noted
23.83	1,634	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
13.89	692	Pleasant Prairie - Zion 345 kV flo Cherry Valley - Silver Lake 345 kV (ComEd)	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
11.42	361	Pleasant Prairie - Zion 345 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
7.41	457	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Proposed, 2013) Badger Coulee 345 kV Line (Proposed 2018)
5.49	683	Lakeview - Zion 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
5.26	1,639	Flow South PTDF	Flow Control Device (Proposed, 2014)
3.81	2,317	Nordic - Felch Tap 69 kV flo Chandler 138/69 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
3.23	214	Rockdale 345/138 kV Transformer T21 flo Rockdale 345/138 kV Transformer T22	Rockdale - West Middleton 345 kV (Planned 2013)
2.10	130	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2012)
1.84	52	Granville - Butler 138 kV flo Granville - Tosa 138 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2012)
1.74	286	Indian Lake 138/69 kV Transformer T2 flo Indian Lake 138/69 kV Transformer T1	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
1.45	316	Sheepskin - Stoughton 69 kV flo Paddock 345/138 kV Transformer T21	Rockdale - West Middleton 345 kV (Planned 2013)
0.67	24	Arcadian 345/138 kV Transformer T2 flo Arcadian 345/138 kV Transformer T1	Replace Arcadian Transformers T2 and T3 (Provisional 2020)
0.65	89	Lakeview - Zion 138 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.59	31	Rocky Run 345/115 kV Transformer T4 flo Rocky Run 345/115 kV Transformer T1	Monroe County - Coucil Creek 161 kV line (Proposed, 2014)
0.58	72	Presque Isle Area Load	
0.58	17	Arcadian - Waukesha 138 kV flo Arcadian - Granville 345 kV	Rebuild Arcadian - Waukesha 138 kV lines KK9942 and KK9962 (Proposed, 2016)
0.58	25	Kansas - Harbor 138 kV flo Kansas - Norwich 138 kV	
0.55	63	Stiles - Pulliam 138 kV (64451) flo Highway 22 - Morgan 345 kV	
0.54	73	Nelson Dewey 161/138 kV Transformer T91	Badger Coulee 345 kV Line (Proposed 2018)
0.45	25	Zion - Arcadian 345 kV flo Zion - Pleasant Prairie 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.37	18	Nicholson - Ramsey 138 kV flo Oak Creek - Pennsylvania 138 kV	
0.36	19	Cedar Ridge - Ohmstead 138 kV flo South Fond Du Lac 345 kV Transformers T21 + T22	
0.32	67	Stiles - Pulliam 138 kV (64441) flo Highway 22 - Morgan 345 kV	
0.27	117	Cedar Ridge - Ohmstead 138 kV flo Edgewater - South Fond Du Lac 345 kV	
0.22	24	Kewaunee 345/138 kV Transformer T10	
0.21	231	Tone Tap - Rudyard Tap 69 kV flo Pine River - Nine Mile 69 kV	
0.19	12	Granville - Tosa 138 kV flo Granville - Butler 345 kV	Upgrade and Replace Terminal Equipment at Tosa Substation (Proposed 2012)
0.18	10	Woodenshoe - Mears Corners 138 kV flo Fitzgerald 345/138 kV Transformer T1	
0.17	22	Kewaunee 345/138 kV Transformer T10 flo Point Beach - Forest Junction 345 kV	
0.15	18	Stiles - Pulliam 138 kV (64441) flo Morgan - Plains 345 kV	
0.14	253	New Holstein - St. Nazianz 69 kV flo Northeast - 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.

0.13	20	Saukville - Edgewater 345 kV flo Point Beach - Sheboygan Energy Center 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.13	38	Indian Lake Transformer 138/69 kV T1 flo Indian Lake Transformer 138/69 kV T2	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.12	6	North Appleton - Werner West 345 kV flo Weston Unit4	
0.12	81	Manrap - Shoto 69 kV flo Northeast - Shoto 69 kV	
0.09	4	Cassel - Sunnyvale 115 kV flo Eau Claire - Arpin 345 kV + Op. Guide	
0.08	55	Nordic - Felch Tap 69 kV flo Plains - Arnold 138 kV ¹	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.07	38	Nordic 138/69 kV Transformer T8 flo Armory - Big Quin Falls 69 kV	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.07	9	East Krok - Kewaunee 138 kV flo Point Beach - Kewaunee 345 kV	
0.06	16	Racine - Oak Creek 138 kV flo Elm Road - Racine 345 kV	
0.06	3	Edgewood - St. Martins 138 kV flo Paddock 345/138 kV Transformer	
0.06	8	Forest Junction - Cypress 345 kV flo Granville - Sheboygan 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.06	9	Kenosha - Lakeview 138 kV flo Arcadian - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.05	2	Bluemound 230/138 kV Transformer T2 flo Bluemound 230/138 kV Transformer T1	
0.05	12	Dam Heights - Okee Tap 69 kV flo Kegonsa - Femrite 138 kV	Rockdale - West Middleton 345 kV (Planned 2013)
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	7	Forest Junction - Cypress 345 kV flo Sheboygan - Granville 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.05	15	Shoto - Mirro 69 kV flo Manrap - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.05	29	Glenview 138/69 kV Transformer T1 flo Shoto 138/69 kV Line	Shoto - Custer 138 kV line (Provisional 2022)
0.04	7	Highway V - East Krok 138 kV flo Kewaunee - North Appleton 345 kV	
0.04	24	Nordic - Perch Lake 138 kV flo Empire - Forsyth 138 kV	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.04	14	Badger 138/115 kV Transformer T1 flo Highway22 - Gardner Park 345 kV	
0.04	3	Kewaunee 345/138 kV Transformer T10 flo Kewaunee - North Appleton 345 kV	
0.04	23	North East - Revere Drive 69 kV flo Manrap - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.03	77	Rudyard Tap - Pine River 69 kV flo Pine River - Nine Mile 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016) ATC Northern Plan Projects
0.03	4	Bain 345/138 kV Transformer T4 flo Pleasant Prairie - Arcadian 345 kV	
0.02	15	Sheepskin - Stoughton 69 kV flo Columbia Unit #1	Rockdale - West Middleton 345 kV (Planned 2013)
0.02	3	Depere - Glory Road 138 kV flo Highway V - Tower Drive 138 kV	
0.02	9	McMillan - Wildwood 115 kV flo Arpin - Rocky Run + Port Edwards SPS 345 kV	Improve clearance on McMillan - Wildwood 115 kV (Planned, 2011)
0.02	24	McGulpin - Straits 138 kV ckt 3 flo McGulpin - Straits 138 kV ckt 1	Flow Control Device (Proposed, 2014)
0.02	2	North Fond Du Lac - Aviation 138 kV flo Butte Des Morts - Neevin 138 kV	

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0.02	8	Caledonia SW STR - Merrimac SW STR 69 kV flo Dam Heights - Kirkwood 69 kV	
0.02	17	Straits - Pine River 69 kV flo Hiawatha 138/69 kV Transformer T1	Flow Control Device (Proposed, 2014)
0.02	65	New Holstein - St. Nazianz 69 kV flo Manrap - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.01	32	Straits - Evergreen 69 kV flo Straits - Pine River 69 kV	Flow Control Device (Proposed, 2014)
0.01	4	Plains 345/138 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) ATC Northern Plan Projects
0.01	17	Straits 138/69 kV Transformer T1 flo Straits - Hiawatha 138 kV + Hiawatha 138/69 kV Transf	Flow Control Device (Proposed, 2014)
0.01	8	Blount - East Campus 69 kV (6906) flo Blount - East Campus 69 kV(6908)	Cardinal - Blount 138 kV line (Provisional, 2020) Possible Blount Unit retirements by end 2011.
0.01	5	Bluemound 230/138 kV Transformer T2 flo Oak Creek 345/230 kV Transformer T895 & Oak	Creek Bus 9
0.01	12	Footville SW STR - REC Center Tap 69 kV flo Kegonsa 138/69 kV T31 Transformer	
0.01	16	New Holstein - St. Nazianz 69 kV flo Lakefront - Revere Drive 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.01	14	Cornell - Chandler 69 kV flo Chandler 138/69 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.01	7	Brevort - Straits - McGulpin 138 kV flo Morgan - Plains 345 kV	Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.01	18	Cornell - Chandler 69 kV flo Empire - Forsyth 138 kV + MINE LOAD	Arnold 345/138 kV Transformer (Provisional, 2015) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.01	2	Sheepskin - Dana Corp SW STR 69 kV flo Stoughton - Kegonsa 69 kV	
0.01	5	McMillan - Wildwood 115 kV flo Arpin - Rocky Run 345 kV	Improve clearance on McMillan - Wildwood 115 kV (Planned, 2011)
0.01	12	Manrap - Custer 69 kV	Shoto - Custer 138 kV line (Provisional, 2022)
0.01	4	Arcadian 345/138 kV Transformer T3 flo Arcadian 345/138 kV Transformer T2	Replace Arcadian Transformers T2 and T3 (Provisional 2020)
0.00	9	Indian Lake - Manistique 69 kV	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	2	University - Whitewater 138 kV	
0.00	2	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV + Zion -Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.00	9	Nine Mile - Kincheloe Main Tap 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	5	Newberry Correctional Facility Tap - Roberts SW STA 69	Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	1	Rockdale 345/138 kV Transformer T21 flo Rockdale 345/138 kV Transformer T23	Rockdale - West Middleton 345 kV (Planned 2013)
0.00	10	Evergreen - Pine River 69 kV flo Straits - Hiawatha 138 kV + Hiawatha 138/69 kV Transform	Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	13	Masonville - Lakehead Rapid River 69 kV flo Chandler - Delta 69 kV	Chandler - 18th Road 138 kV line (Proposed 2014)
0.00	9	Nine Mile - Kincheloe Main Tap 69 kV flo Hiawatha - Roberts 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	4	Northeast - Mirro SW STR 69 kV flo Manrap - Shoto 69 kV	
0.00	11	Roberts - Lou Pac Tap 69 kV	

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0.00	2	University - Whitewater 138 kV flo University - Sugar Creek 138 kV	
0.00	14	New Holstein - St. Nazianz 69 kV flo Glenview - Shoto 138 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.00	2	Cedar Ridge - Kettle Moraine 138 kV flo Edgewater - South Fond Du Lac 345 kV	
0.00	8	Mass - Bruce Crossing 69 kV flo Atlantic - Winona 69 kV	ATC Northern Plan Projects
0.00	8	Indian Lake 138/69 kV Transformer T1	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	30	Rock River 138/69 kV Transformer T42	
0.00	2	Hiawatha - Roberts 69 kV	Pine River-Straits 69kV rebuild (Proposed 2014) Control Device (Proposed, 2014) ATC Northern Plan Projects Flow
0.00	5	Ontonagon 138/69 kV Transformer flo Mass - Victoria 69 kV	ATC Northern Plan Projects
0.00	7	Pine Grove Tap - 3 Mile 69 kV	
0.00	6	Rock River - Turtle 69 kV	
0.00	3	Watson Tap - Forsyth 69 kV flo Nordic - Chandler 69 kV	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	2	Atlantic 138/69 kV Transformer T1 flo M38 138/69 kV Transformer T1	
0.00	5	Petenwell 138/69 kV Transformer T31	
0.00	13	Hiawatha - Engadine Tap 69 kV	Pine River-Straits 69kV rebuild (Proposed 2014) Control Device (Proposed, 2014) ATC Northern Plan Projects Flow
0.00	5	Chandler 138/69 kV Transformer T1 flo Plains 345/138 kV Transformer TR1 ¹	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	5	Chandler - Delta 69 kV CKT1 flo Chandler - Delta 69 kV CKT2	
0.00	1	McCue - REC Harmony Tap 69 kV flo Christiana - Kegonsa 138 kV	Construct 69-kV double-circuit line between McCue and Lamar (Provisional, 2022)
0.00	2	Hiawatha - Engadine Tap 69 kV flo Pine River - Nine Mile 69 kV	Pine River-Straits 69kV rebuild (Proposed 2014) Control Device (Proposed, 2014) ATC Northern Plan Projects Flow
0.00	4	Cornell Tap - Harris Tap flo Chandler 138/69 kV Transformer T1	
0.00	2	Brimley Tap - Raco Tap 69 kV flo Hiawatha - Roberts 69 kV	Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	4	St. Nazianz - Custer 69 kV flo Glenview - Shoto 138 kV	
0.00	1	Kelly - Bunker Hill 115 kV flo Gardner Park - Blackbrook - Aurora 115 kV	
0.00	2	Manrap - Custer 69 kV flo Shoto 138/69 kV Transformer T1	Shoto - Custer 138 kV line (Provisional, 2022)
0.00	1	Pine - Grandfather Falls 115 kV	
0.00	1	M38 - Atlantic 138 kV	ATC Northern Plan Projects
0.00	4	Western UP Import (North Lake - M 38 ; Bruce Crossings Line)	ATC Northern Plan Projects
0.00	1	Glenview 138/69 kV Transformer T1 flo Kewaunee - Shoto 138 kV Line	Shoto - Custer 138 kV line (Provisional 2022)
0.00	1	Plains - Arnold 138 kV flo Dead River - Plains 345 kV + Mine Load	Arnold 345/138 kV Transformer (Provisional, 2015) ATC Northern Plan Projects
0.00	1	Chandler - Cornell 69 kV flo Chandler 138/69 kV Transformer T1	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.00	1	Mass - Bruce Crossing 69 kV flo M-38 - Perch Lake 138 kV	ATC Northern Plan Projects

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0.00	1	Nine Mile - Pine Grove 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	29	Detour Transformer T2	No solution - virtual activity causing congestion
0.00	152	Manistique Transformer T1	No solution - virtual activity causing congestion
0.00	3	Weston Unit G31 Output	No solution - virtual activity causing congestion

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Severity Index	Hours	Constraint	Potential Solution
78.19	1,962	Total for all ATC Real Time constraints 1-1-2011 thru 12-31-2011	Solutions listed in ATC TYA unless otherwise noted
14.33	246	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
7.90	81	Pleasant Prairie - Zion 345 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
5.34	146	Lakeview - Zion 138 kV flo Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
4.51	54	Flow South	Flow Control Device (Proposed, 2014)
4.12	39	Pleasant Prairie - Zion 345 kV flo Cherry Valley - Silver Lake 345 kV (ComEd)	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
4.03	5	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Proposed, 2013) Badger Coulee 345 kV Line (Proposed 2018)
3.84	17	North Appleton - Werner West 345 kV flo Weston Unit4	Area transmission and generation outages may have contributed to this constraint
3.56	32	Indian Lake 138/69 kV Transformer T2 flo Indian Lake 138/69 kV Transformer T1	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
2.86	509	Nordic - Felch Tap 69 kV flo Chandler 138/69 kV Transformer T1	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
2.81	17	Nelson Dewey 161/138 kV Transformer T91	Badger Coulee 345 kV Line (Proposed 2018)
2.74	41	Rockdale 345/138 kV Transformer T21 flo Rockdale 345/138 kV Transformer T22	Rockdale - West Middleton 345 kV (Planned 2013)
2.74	100	Sheepskin - Stoughton 69 kV flo Paddock - Rockdale 345 kV	Rockdale - West Middleton 345 kV (Planned 2013)
2.21	15	Zion - Arcadian 345 kV flo Zion - Pleasant Prairie 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
1.96	18	Morrison Avenue - Sherman Street 115 kV flo Gardner Park - Hilltop 115 kV	
1.72	19	Racine - Oak Creek 138 kV flo Elm Road - Racine 345 kV	
1.62	30	Granville - Butler 138 kV flo Granville - Arcadian 345 kV	Terminal Equipment Replacement at Butler Substation (Proposed 2012)
1.38	8	Rocky Run 345/115 kV Transformer T4 flo Rocky Run 345/115 kV Transformer T1	Monroe County - Coucil Creek 161 kV line (Proposed, 2014)
1.09	51	Presque Isle Area Load	
1.02	17	Rockdale 345/138 kV Transformer T21 flo Rockdale 345/138 kV Transformer T23	Rockdale - West Middleton 345 kV (Planned 2013)
0.92	43	Lakeview - Zion 138 kV flo Zion - Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.70	12	Granville - Tosa 138 kV flo Granville - Butler 345 kV	Upgrade and Replace Terminal Equipment at Tosa Substation (Proposed 2012)
0.66	8	McMillan - Wildwood 115 kV flo Arpin - Rocky Run 345 kV + Port Edwards SPS	Improve clearance on McMillan - Wildwood 115 kV (Planned, 2011)
0.66	9	Forest Junction - Arcadian 345 kV flo Sheboygan Falls - Granville 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.46	6	Stiles - Pulliam 138 kV (64441) flo Morgan - Plains 345 kV	
0.37	3	North Appleton - Werner West 345 kV flo Sherburne Co Units	
0.36	3	Albers - Paris 138 kV flo Pleasant Prairie - Racine 345 kV	
0.34	16	Woodenshoe - Mears Corners 138 kV flo Fitzgerald 345/138 kV Transformer T1	
0.32	5	Indian Lake Transformer 138/69 kV T1 flo Indian Lake Transformer 138/69 kV T2	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.31	5	Indian Lake - Valley Tap 69 kV flo Indian Lake Hiawatha 69 kV	Indian Lake - Hiawatha 138kV line (Proposed, 2014) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects

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0.28	4	Bluemound - Butler 138 kV (5051) flo Elm Road - Arcadian 345 kV	
0.27	7	Kansas - Harbor 138 kV flo Kansas - Norwich 138 kV	
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, 2014)
0.25	2	Saukville - Edgewater 345 kV flo Point Beach - Sheboygan Energy Center 345 kV	Barnhart - Branch River Reliability Project (Provisional, 2018)
0.25	7	Pleasant Prairie - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.20	14	Nordic - Felch Tap 69 kV flo Plains - Arnold 138 kV ¹	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.19	153	New Holstein - St. Nazianz 69 kV flo Shoto 138/69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.17	0	Arpin 345/138 kV Transformer T21 flo Arpin - Rocky Run 345 kV	Monroe County - Coucil Creek 161 kV line (Proposed, 2014) Badger Coulee 345 kV Line (Proposed 2018)
0.15	2	Bluemound 230/138 kV Transformer T2 flo Bluemound 230/138 kV Transformer T1	
0.14	48	Cedar Ridge - Ohmstead 138 kV flo Edgewater - South Fond Du Lac 345 kV	
0.11	1	North Appleton - Werner West 345 kV flo Sherbourne County Unit #3 (NSP)	
0.08	1	Cedar Ridge - Ohmstead 138 kV flo South Fond Du Lac 345/138 kV Transformer TR21 & TR22	
0.08	2	Elkhart Lake - Saukville 138 kV flo Sheboygan Energy Center - Granville 345 kV	ATC is investigating a future 345 kV N-S path in the Fox Valley corridor
0.08	31	Manrap - Shoto 69 kV flo Northeast - Shoto 69 kV	
0.07	1	Rudyard Tap - Pine River 69 kV flo Pine River - Nine Mile 69 kV	Uprate Pine River - Nine Mile 69 kV line (Proposed 2016) ATC Northern Plan Projects
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)
0.06	5	Kenosha - Lakeview 138 kV flo Arcadian - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.06	1	Stiles - Pulliam 138 kV (64451) flo Highway 22 - Morgan 345 kV	
0.05	1	Rocky Run 345/115 kV Transformer T4 flo Arpin - Rocky Run 345 kV	Monroe County - Coucil Creek 161 kV line (Proposed, 2014)
0.05	2	Nelson Dewey - Glen Haven Tap 69 kV flo Nelson Dewey 138/115 kV Transformer T91	
0.05	47	New Holstein - St. Nazianz 69 kV flo Northeast - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.04	1	Kilbourn 138/69 kV Transformer T32 flo Kilbourn 138/69 kV Transformer T31	
0.04	18	Nordic 138/69 kV Transformer T8 flo Dead River - Plains 345 kV + Mine Load	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.03	3	Kenosha - Lakeview 138 kV flo Arcadian 345/138 kV Transformer T3	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.03	1	Petenwell - Badger West 138 kV flo Eau Claire - Arpin 345 kV	
0.03	3	Eden - Mineral Point 69 kV flo Hillman - Darlington 138 kV	
0.03	9	Watson Tap - Forsyth 69 kV flo Chandler 138/69 kV Transformer T1	Second Chandler 138/69 kV Transformer (Proposed, 2012)
0.03	1	McMillan - Wildwood 115 kV flo Arpin - Rocky Run 345 kV	Improve clearance on McMillan - Wildwood 115 kV (Planned, 2011)
0.02	1	Elkhart Lake - Forest Junction 138 kV flo Point Beach - Sheboygan Energy Center 345 kV +	Upgrades associated with G611 (Planned 2010) ATC is investigating a future 345 kV N-S path in the Fox Valley corridor
0.02	2	Glenview 138/69 kV Transformer T1 flo Kewaunee - Shoto 138 kV Line	Shoto - Custer 138 kV line (Provisional 2022)
0.02	7	Verona - Oregon 69 kV flo Kegonsa 138/69 kV Transformer T31	
0.02	0	Kenosha - Lakeview 138 kV flo Pleasant Prairie - Zion 345 kV + Zion -Arcadian 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)
0.01	0	Kenosha - Lakeview 138 kV flo Zion - Northbrook (B) 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Proposed 2014)

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

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

0.01	5	Chandler - Goodman SW STR flo Chandler - Delta 69 kV	Chandler - 18th Road 138 kV line (Proposed 2014)
0.01	0	Arcadian 345/138 kV Transformer T3 flo Pleasant Prairie - Zion 345 kV	Replace Arcadian Transformers T2 and T3 (Provisional 2020)
0.01	5	University - Whitewater 138 kV	
0.01	1	Cornell - Chandler 69 kV flo Plains - Arnold 138 kV	Arnold 345/138 kV Transformer (Provisional, 2015) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.01	2	Presque Isle Output	ATC Northern Plan Projects
0.00	0	Sheepskin - Stoughton 69 kV flo Rock River 138/69 kV Transformer	Rockdale - West Middleton 345 kV (Planned 2013)
0.00	1	Werner West - Rocky Run 345 kV flo Highway 22 - Gardner Park 345 kV	
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	6	New Holstein - St. Nazianz 69 kV flo Lakefront - Revere Drive 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.00	1	Shoto - Mirro 69 kV	Shoto - Custer 138 kV line (Provisional 2022)
0.00	1	Northeast - Mirro SW STR 69 kV flo Manrap - Shoto 69 kV	
0.00	0	Nordic - Felch Tap 69 kV flo Empire - Forsyth 138 kV	Arnold 345/138 kV Transformer (Provisional, 2015) Second Chandler 138/69 kV Transformer (Proposed, 2012) Flow Control Device (Proposed, 2014) ATC Northern Plan Projects
0.00	1	Badger 138/115 kV Transformer T1 flo Highway22 - Gardner Park 345 kV	
0.00	0	Glenview 138/69 kV Transformer T1 flo Tecumseh Road 138/69 kV Transformer	Shoto - Custer 138 kV line (Provisional 2022)
0.00	1	Manrap - Custer 69 kV flo North East - Shoto 69 kV	Shoto - Custer 138 kV line (Provisional, 2022)
0.00	0	Westmark - Kellnersville flo Shoto 138/69 kV Transformer T1	
0.00	0	New Holstein - St. Nazianz 69 kV flo Manrap - 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.



