



Economic planning

ATC utilizes three methods to determine which projects have the potential for economic benefits:

1. Stakeholder Input and Analyses (FERC Order 890)
2. Reliability Project Screening
3. Congestion Severity Index

These methods are described below.

Stakeholder Input and Analyses

In March 2008, Federal Energy Regulatory Commission (FERC) Order 890-A took effect. As part of this order, FERC requires a coordinated, open, and transparent transmission planning process on both a local and regional level. To comply with these requirements, ATC submitted a compliance filing on Order 890-A that provides a timeline of actions to ensure that the economic planning process is both coordinated and open.

Annually, ATC will use a process with consistent timelines that combines stakeholder input, historical data, future line flow forecasts, and updated information on the electric system to identify transmission upgrades for economic evaluation.

Each year:

- During February, we hold an initial stakeholder meeting to review the market congestion summary and potential fixes and to discuss economic study scenarios, drivers, ranges, and assumptions.
- By March 1, we work with stakeholders to request and prioritize new/other economic studies and recommend study assumptions.
- By April 15 – we identify preliminary areas of economic study, study assumptions and models and solicit further comments from stakeholders.
- By May 15 – we finalize areas of economic study, study assumptions and models to be used in analysis.
- By November 15 – we provide a summary of the results of the economic analyses to our stakeholders.

ATC conducts analyses of the projects identified for study over several months' time and posts the key results, including the extent to which these savings offset project costs. When the expected benefits of a studied project are high enough to justify its costs, the process of developing it as a formal proposal is begun.



As a result of the 2012 ATC/stakeholder collaborative process, we are performing economic analyses on the following ATC facilities:

Order 890 Economic Studies

- Saratoga – Petenwell Area
- Granville – Butler – Bluemound – St. Martins – Oak Creek Area

Studies will be performed and results shared with stakeholders over the course of the year. In addition, customers and stakeholders who would like to request specific economic studies can do so if they are willing to pay for the studies and are willing to have the results posted publicly.

Reliability Project Screening

Economic analyses were performed on 20 projects from the 2011 10-Year Assessment project list to determine whether those projects were candidates for acceleration or deferral based on economic considerations. Please refer Table EP-1 for the list of projects screened. The list of 20 projects was based primarily on the availability of redispatch and capital costs of the projects; however, lower cost projects specifically identified by the ATC planning department were also included in the study. Generation interconnection and distribution interconnection projects were not eligible for inclusion in this list. Further, capacitor bank projects were not considered since the voltage benefits provided were not captured by the PROMOD software analysis. Finally, projects with in-service dates prior to 2014 were not considered since development of those projects was too far underway to make scheduling changes. As a result of this screening, one project was identified as having potential economic benefits and a candidate for acceleration of the original in-service date. It is project 14 from Table EP-1: Constructing a 345/138kV transformer at a new 345kV North Randolph bus and looping the Columbia to South Fond du Lac 345kV line into it.

A similar analysis will be performed in the 2013 10-Year Assessment based upon the 2012 Assessment project list.



Table EP-1
List of Ten Year Assessment 2011 Economically Screened Projects

#	System Additions	Zone
1	Replace 138/69-kV transformer at Metomen Substation	1
2	Reconfigure Y-26 near Metomen to create new Mackford Prairie to Brandon 69-kV Line	1
3	Install a second 138/69-kV transformer at Wautoma Substation	1
4	Replace existing Caroline 115/69-kV transformer	1
5	Uprate Winneconne-Sunset Point 69-kV line Y-103	1
6	Uprate Ripon-Northwest Ripon 69-kV line Y-93	1
7	Construct Cardinal-Blount 138-kV line	3a
8	Install a second 100 MVA 138/69 kV transformer at Hillman Substation	3a
9	Rebuild West Middleton-Pheasant Branch 69-kV line with double circuits to achieve a 240 MVA SE on each circuit	3a
10	Uprate Y87 North Monroe-South Monroe 69-kV line to 115 MVA SE	3a
11	Install a second 138/69-kV transformer at Spring Green with a 100 MVA summer normal rating	3a
12	Rebuild the Y-119 Sun Valley Tap to Oregon 69-kV line	3a
13	Rebuild Y-32 Colley Road-Brick Church 69-kV line	3b
14	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	3b
15	Construct a Lake Delton-Birchwood 138-kV line	3b
16	Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers	4
17	Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer	5
18	Uprate Oak Creek-Bluemound 230-kV line	5
19	Uprate Oak Creek-Pennsylvania 138-kV line	5
20	Reconductor Ramsey-Harbor 138-kV line	5



Congestion Severity Index

ATC developed a Congestion Severity Index for use as the screening indicator to track locations on the transmission system where constraints to the delivery of economic energy exist. The Congestion Severity Index combines the financial impact of constraints with the frequency of constraints. The financial impact during an hour is the calculated theoretical maximum number of dollars that could be paid into the market due to congestion on the constraint in question. The sum of the total financial impacts for each hour during which the constraint occurs forms the basis of the Congestion Severity Index. This information is used as a starting point in determining areas of the system where potential upgrades may be cost-effective. This data is combined with stakeholder input and ATC planning recommendations to identify a group of projects to study. A list of the most severe market constraints in the Day Ahead and Real Time markets for 2011 is given in Tables ZS-5 and ZS-6, respectively. Maps depicting the geographic locations of the most severe market constraints in the Day Ahead and Real Time markets for 2011 are shown in Figures ZS-27 and ZS-28, respectively.



Table ZS-5
ATC Day Ahead Market Most Limiting Elements - 2011

Severity Index	Hours	Constraint	Potential Solution
25.31	1,053	Pleasant Prairie - Zion 345 kV	Upgrade equipment at Zion Substation in ComEd system (In Service March 2011) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)
23.90	1,645	Kenosha - Lakeview 138kV	SE Wisconsin SPS (In Service July 2012) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013) Kenosha - Lakeview 138 kV Rebuild (Planned 2014)
7.41	457	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Planned 2014) Badger Coulee 345 kV Line (Proposed 2018)
6.14	772	Lakeview - Zion 138kV	SE Wisconsin SPS (In Service July 2012) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)
5.26	1,639	Flow South PTFD	Flow Control Device (Planned 2014) Bay Lake Project (Proposed 2016) ATC Northern Plan Projects
3.94	182	Butler - Granville 138 kV	Terminal Equipment Replacement at Butler Substation (In Service May 2012)
3.89	2,372	Nordic - Felch Tap 69kV	Second Chandler 138/69 kV Transformer (In Service May 2012) Chandler - Old Mead Road 138 kV line (Proposed 2014) Arnold 345/138 kV Transformer (Proposed 2014) Bay Lake Project (Proposed 2016)
3.29	220	Rockdale 345/138kV Transformer T21	Rockdale - West Middleton 345 kV (Planned 2013)
1.74	286	Indian Lake 138/69 kV Transformer T2	Flow Control Device (Planned 2014) Hiawatha - Indian Lake 138 kV line (Proposed 2014) ATC Northern Plan Projects
1.47	331	Sheepskin - Stoughton 69kV	Rockdale - West Middleton 345 kV (Planned 2013)
0.67	24	Arcadian 345/138 kV Transformer T2	Replace Arcadian Transformers T2 and T3 (Provisional 2020)
0.64	136	Cedar Ridge - Ohmstead 138 kV	Barnhart - Branch River Reliability Project (Proposed 2018)
0.59	31	Rocky Run 345/115kV Transformer T4	Monroe County - Council Creek 161 kV line (Planned 2014)
0.58	72	Presque Isle Area Load	Bay Lake Project (Proposed 2016) ATC Northern Plan Projects
0.58	17	Arcadian - Waukesha 138kV	Rebuild Arcadian - Waukesha 138 kV lines KK9942 and KK9962 (Proposed 2016)
91.27	11,202	Total for All ATC Day Ahead Constraints - 2011	

Figure ZS-27
ATC Day Ahead Market Top 15 Most Limiting Elements - 2011

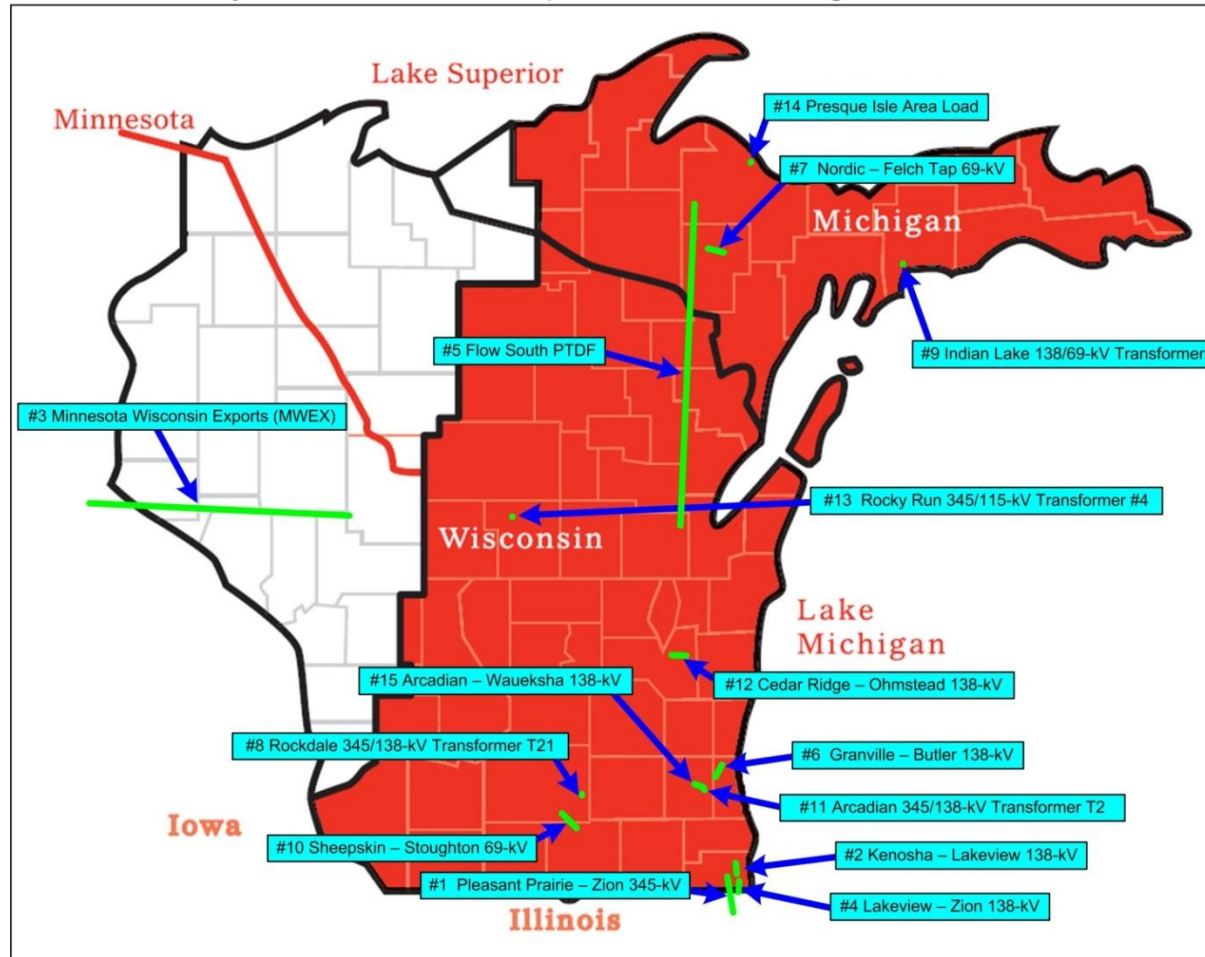




Table ZS-6
ATC Real Time Market Most Limiting Elements - 2011

Severity Index	Hours	Constraint	Potential Solution
14.45	254	Kenosha - Lakeview 138 kV	SE Wisconsin SPS (In Service July 2012) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013) Kenosha - Lakeview 138 kV Rebuild (Planned 2014)
12.26	127	Pleasant Prairie - Zion 345 kV	Upgrade equipment at Zion Substation in ComEd system (In-Service March 2011) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)
6.26	190	Lakeview - Zion 138 kV	SE Wisconsin SPS (In Service July 2012) Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)
4.51	54	Flow South	Flow Control Device (Planned 2014) Bay Lake Project (Proposed 2016) ATC Northern Plan Projects
4.33	21	North Appleton - Werner West 345 kV	Bay Lake Project (Proposed 2016)
4.03	5	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Planned 2014) Badger - Coulee 345 kV line (Proposed 2018)
3.76	58	Rockdale 345/138 kV Transformer T21	Rockdale - West Middleton 345 kV (Planned 2013)
3.56	32	Indian Lake 138/69 kV Transformer T2	Flow Control Device (Planned 2014) Hiawatha - Indian Lake 138 kV line (Proposed 2014) ATC Northern Plan Projects
3.07	524	Nordic - Felch Tap 69 kV	Second Chandler 138/69 kV Transformer (In Service May 2012) Chandler - Old Mead Road 138 kV line (Proposed 2014) Arnold 345/138 kV Transformer (Proposed 2014) Bay Lake Project (Proposed 2016)
2.81	17	Nelson Dewey 161/138 kV Transformer T91	Cardinal - Bluffs 345 kV line (Provisional 2018)
2.74	100	Sheepskin - Stoughton 69 kV	Rockdale - West Middleton 345 kV (Planned 2013)
2.21	15	Arcadian - Zion 345 kV	Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)
1.96	18	Morrison Avenue - Sherman Street 115 kV	Morrison Ave - Sherman Street 115 kV Uprate (Proposed 2016)
1.72	19	Oak Creek - Racine 138 kV	Oak Creek - Racine 138 kV Reconductor (Proposed 2016)
1.62	30	Butler - Granville 138 kV	Terminal Equipment Replacement at Butler Substation (In Service May 2012)
78.19	1,962	Total for All ATC Real Time Constraints - 2011	

Figure ZS-28
ATC Real Time Market Top 15 Most Limiting Elements - 2011

