



Economic Planning

Congestion Severity Index

ATC has developed a Congestion Severity Index for use in 2009 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 total of the 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 2008 is given in Tables ZS-5 and ZS-6, respectively.

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.



10-Year Assessment

An annual report summarizing proposed additions and expansions to the transmission system to ensure electric system reliability.

2009

October 2009 10-Year Assessment
www.atc10yearplan.com

As a result of the 2009 ATC/stakeholder collaborative process, we are performing economic analyses on the following projects:

- North La Crosse – Spring Green – Cardinal 345 kV,
- Lore - Spring Green - Cardinal 345 kV,
- A combination of the two above projects,
- Genoa – North Monroe 765 kV, and
- Bain – Zion 345 kV

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.

Additional economic analysis will be performed on 20 projects from the 2009 10-Year Assessment project list to determine whether those projects are candidates for acceleration or deferral based on economic considerations. Prioritization of this list of 20 projects will be based primarily on the capital costs of the projects; however, lower cost projects specifically identified by the ATC planning department will also be included in the study. Generation interconnection and distribution interconnection projects will not be eligible for inclusion in this list. Further, capacitor bank projects are not considered since the voltage benefits provided are not captured by the PROMOD software analysis. Finally, projects with in-service dates prior to 2011 are not considered since development of those projects is too far underway to make scheduling changes.

2009 Meetings and materials

ATC's Futures Matrix summarizes the assumptions that are used to develop our economic planning models. Since ATC posted its May 28, 2009 [Futures Matrix](#), it has continued to receive input from stakeholders and to review local and regional developments related to transmission planning for future Extra High Voltage (EHV) projects. As a result of this review, ATC developed an [Updated Futures Matrix](#) for the 2020 study year. A [Description of the Updates](#) and a [Narrative of Each of the Futures](#) are also available. The projects to be studied in 2009 are:

- North La Crosse-Spring Green-Cardinal 345 kV,
- Lore-Spring Green-Cardinal 345 kV,
- A combination of both of the two lines listed above,
- North La Crosse – North Madison – Cardinal 345 kV,
- Low voltage alternative,
- Genoa-North Monroe 765 KV, and
- Bain-Zion 345 kV.

July meeting (posted 06/09/09)

July 10, 2009 - 9:30 am - 2 pm [RSVP](#) requested

Meeting agenda (agenda and materials updated 7/10/09)

Agenda Item 1: Opening Remarks

Agenda Item 2: [2009 Futures Matrix Review](#)

Agenda Item 2A: [2009 Futures Matrix Descriptions](#)



10-Year Assessment

An annual report summarizing proposed additions and expansions to the transmission system to ensure electric system reliability.

2009

October 2009 10-Year Assessment
www.atc10yearplan.com

[Agenda Item 2B: 2009 Futures Matrix](#)
[Agenda Item 3: Detail PROMOD Study Assumptions](#)
[Agenda Item 3A: Detail PROMOD Study Assumptions: Demand Response Modeling](#)
[Agenda Item 4: Economic Projects to Study](#)
[Agenda Item 5: Regional Planning Updates](#)
[Agenda Item 6: 10-Year Assessment Solutions](#)
[Agenda Item 6: 10-Year Assessment Futures](#)
[Agenda Item 6: 10-Year Assessment Scope](#)
[Agenda Item 7: Adjourn](#)

[Stakeholder feedback](#) from July 2009 meeting

March meeting (posted 02/11/09)
March 6, 2009 - 9 am - 3 pm [RSVP](#) requested
[Meeting agenda](#) (agenda and materials updated 3/5/09)

6/10/09 - Update to Economic Planning Study Results

An adjustment was made to update an incorrect value for the 40-Year PV Savings of the Slow Growth Future with North La Crosse – Hilltop – Spring Green – Cardinal 345 kV Project. Previously, this material was presented during the March 6, 2009 meeting – Agenda Item 1: Economic Planning Study Results. The updated value can be found on Slide 9 of the following presentation:

[Agenda Item 1: Economic planning study results](#)
[Agenda Item 1: Supplemental information](#)
[Agenda Item 2: Economic metric comparisons](#)
[Agenda Item 3: Congestion review](#)
[Agenda Item 4: 2009 Futures: economic and reliability studies](#)
[Agenda Item 5: West Wisconsin study and UMTDI and RGOS update](#)
[Agenda Item 6: 2009 10-Year Assessment update](#)
[Agenda Item 6: Energy collaborative supplement](#)

[Stakeholder feedback](#) from December 2008 meeting
Economic projects under consideration

- [Bain-Zion 345 kV](#),
- [North La Crosse-Hilltop-Spring Green-Cardinal 345 kV](#), and
- [Lore-Spring Green-Cardinal 345 kV](#)

2008 Meetings and materials

December meeting (**posted 12/18/08**)
December 18, 2008 - 9:30-11:30am
Web meeting/conference call

[Meeting Agenda](#)
[Agenda item 1: Futures Review and Base Case Implementation](#)



10-Year Assessment

An annual report summarizing proposed additions and expansions to the transmission system to ensure electric system reliability.

2009

October 2009 10-Year Assessment
www.atc10yearplan.com

- [Agenda item 2: Base Case Imports and Tie Line Flows](#)
- [Agenda item 3: Preliminary Base Case and Projects Results](#)
- [Agenda item 4: Potential Modeling Refinements](#)

On May 15, 2008, ATC posted the final set of assumptions and final futures matrix to be used for ATC's 2008 economic planning. At that time, ATC anticipated that the latest base PROMOD models would be available shortly but those models were not received until early August. ATC hosted a generation expansion workshop on August 22, 2008 to obtain additional input from stakeholders on the methodology to review the generation expansion assumptions in the MISO models and to add generation to the model to accommodate a wide range of futures. The development of the models for the futures is nearing completion.

December's meeting will discuss interim results.

August meeting materials (posted 8/25/08)

- [Meeting agenda](#)
- [Generation needed for various futures](#)
- [MISO siting spreadsheet for MTEP 2009](#)

June planning meeting materials (posted 6/18/08)

- [Meeting agenda](#)
- [Agenda item 1: Futures diagrams](#)
- [Agenda item 1: Futures narratives](#)
- [Agenda item 2: Peak load forecasts](#)
- [Agenda item 3: Generation portfolio](#)
- [Agenda item 4: Modeling modifications](#)
- [Agenda item 5: MISO MTEP 09 modeling](#)

Spring meeting materials

- [Recent meeting agenda and materials](#) (posted 2/18/08)
- [Comment summary, draft futures matrix and request for comments](#) (posted 3/19/08)
- [Comment summary Round II, updated futures matrix and next steps](#) (posted 4/15/08)
- [Final futures matrix](#) (posted 5/15/08)

[Midwest ISO Market Constraints Report for ATC's service area](#) (updated monthly)

Contact:

[Jamal Khudai](#), Manager - Economic Planning
1.866.899.3204, ext. 6166

Table ZS-5
ATC Day Ahead Market Most Limiting Elements, 2008

Severity Index	Hours (hits)	Constrained Element	Potential Solution
40.39	1,847	Paddock 345/138 kV Transformer T21	Paddock - Rockdale 345 kV (Planned 2010)
19.48	408	Pleasant Prairie - Zion 345 kV	TBD*
17.41	519	Point Beach - Sheboygan 345 kV	Point Beach - Sheboygan 345 kV line uprate (2010)
8.25	221	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County-Council Creek 161 kV (Proposed 2012)**
8.04	915	Whitcomb - Caroline 115 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
5.76	205	Ellington - Hintz 138 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
5.18	166	Granville 345/138 kV Transformer T1	Install second 345/138 kV transformer at Oak Creek (Planned, 2009)
4.51	78	Bluemound 230/138 kV Transformer T3	Install second 345/138 kV transformer at Oak Creek (Planned, 2009)
4.11	93	Kelly - Whitcomb 115 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
4.02	204	Hintz - Werner 138 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
3.80	163	Arpin - Sigel 138 kV	Arrowhead - Gardner Park 345 kV (Completed 2008) Monroe County-Council Creek 161 kV (Proposed 2012)**
3.75	351	Dewey (CW8) - Weston 115 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
3.43	47	Rocky Run - Plover 115 kV	Morgan - Highway 22 - Werner West 345 kV line (Planned 2009)
3.18	44	Pleasant Valley - Arthur Road 138 kV	Reconductor Saukville - Pleasant Valley – Arthur Road - St. Lawrence 138 kV (Completed 2008)
3.09	134	Eau Claire - Arpin 345 kV	Arrowhead - Gardner Park 345 kV (Completed 2008) Monroe County-Council Creek 161 kV (Proposed 2012)**
177.13	18,295	Total for all ATC Day Ahead constraints - 2008	

* Additional potential solution being studied as part of 2009 Economic Analysis process: Bain - Zion 345 kV line

** Additional potential solutions being studied as part of 2009 Economic Analysis process: N. LaCrosse - Cardinal kV & Salem - Cardinal 345 kV

Table ZS-6
ATC Real Time Market Most Limiting Elements, 2008

Severity Index	Hours (hits)	Constrained Element	Potential Solution
45.13	376	Paddock 345/138 kV Transformer T21	Paddock - Rockdale 345 kV (Planned 2010)
15.58	133	Point Beach - Sheboygan 345 kV	Point Beach - Sheboygan 345 kV line uprate (Proposed 2010)
13.26	119	Pleasant Prairie - Zion 345 kV	TBD*
11.37	87	Eau Claire - Arpin 345 kV	Arrowhead - Gardner Park 345 kV (Completed 2008) Monroe County-Council Creek 161 kV (Proposed 2012)**
11.06	407	Whitcomb - Caroline 115 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
9.05	71	Ellington - Hintz 138 kV	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
7.30	19	Southeast Wisconsin Interface	TBD*
5.54	30	Stone Lake - Gardner Park 345 kV	Monroe County-Council Creek 161 kV (Proposed 2012)**
4.08	112	Arpin - Sigel 138 kV	Arrowhead - Gardner Park 345 kV (Completed 2008) Monroe County-Council Creek 161 kV (Proposed 2012)**
3.36	26	Rocky Run 345/115 kV Transformer T4	Gardner Park - Highway 22 - Werner West 345 kV (Planned 2009) Monroe County-Council Creek 161 kV (Proposed 2012)
3.36	37	Paddock - Town Line Road 138 kV	Paddock - Rockdale 345 kV (Planned 2010)
3.33	40	Granville - Butler 138 kV	Elm Rd. Phase 1 (Expected 2009)
3.22	131	Badger 138/115 kV Transformer T1	Gardner Park - Highway 22 - Morgan 345 kV (Planned 2009)
3.20	23	Granville 345/138 kV Transformer T1	Install 2nd 345/138 kV transformer at Oak Creek (Planned, 2009)
2.89	11	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County-Council Creek 161 kV (Proposed 2012)**
179.87	3,101	Total for all ATC Real Time constraints - 2008	

* Additional potential solution being studied as part of 2009 Economic Analysis process: Bain - Zion 345 kV line

** Additional potential solutions being studied as part of 2009 Economic Analysis process: N. LaCrosse - Cardinal 345 kV & Salem - Cardinal 345 kV