



# 10-Year Assessment

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

# 2010

September 2010 10-Year Assessment  
[www.atc10yearplan.com](http://www.atc10yearplan.com)

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 2010 ATC/stakeholder collaborative process, we are performing economic analyses on the following projects:

*Order 890 Economic Studies*

- North La Crosse – North Madison – Cardinal 345-kV Project
- Bain – Zion Energy Center 345-kV Project

*Optional Economic Studies*

In addition, ATC is studying the following projects:

Alternatives to North La Crosse – North Madison – Cardinal 345-kV:

- Dubuque – Spring Green – Cardinal 345-kV Project
- North La Crosse – Spring Green – Cardinal 345-kV Project
- Combination
  - North La Crosse – North Madison – Cardinal 345-kV Project
  - Dubuque – Spring Green – Cardinal 345-kV Project
- Genoa – North Monroe 765-kV Project
- Western Wisconsin Low Voltage Package of Projects

Alternative to Bain – Zion Energy Center 345-kV:

- Racine – Zion Energy Center 345-kV Project

Lake Michigan HVDC Project

- Point Beach – Ludington HVDC
- Oak Creek - Michigan City HVDC

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 2009 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. Prioritization of this 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 2012 were not considered since development of those projects was



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too far underway to make scheduling changes. As a result of this screening, one project (McCue-Lamar) was identified as having potential economic benefits and a candidate for acceleration of the in-service date.

A similar analysis will be performed in the 2011 10-Year Assessment based upon the 2010 Assessment project list.

*Table EP-1  
10-Year Assessment Projects Screened*

| <b>System Additions</b>  | <b>Planning Zone</b> |
|--|----------------------|
| Construct Spring Valley-Twin Lakes-South Lake Geneva 138-kV line   | 3                    |
| Construct West Middleton-Blount 138-kV line  | 3                    |
| Rebuild/convert Straits-Pine River 138-kV lines 6904/5 and uprate overhead portions of Straits-McGulpin 138-kV circuits #1 & #3 to 230 F degree summer emergency ratings | 2                    |
| Rebuild/Convert Bayport-Suamico-Sobieski-Pioneer 69-kV line to 138 kV  | 4                    |
| Construct Shoto to Custer 138-kV line and Install 138/69-kV transformer at Custer Substation   | 4                    |
| Construct Canal-Dunn Road 138-kV line and Install 60 MVA 138/69-kV transformer at Dunn Road  | 4                    |
| Construct new 138-kV line from North Lake Geneva to South Lake Geneva Substation and install a 138/69-kV 100 MVA transformer at South Lake Geneva substation             | 3                    |
| Construct a Horicon-East Beaver Dam 138-kV line  | 3                    |
| Rebuild Y-32 Colley Road-Brick Church 69-kV line   | 3                    |
| Construct a Lake Delton-Birchwood 138-kV line  | 3                    |
| Construct 69-kV double-circuit line between McCue and Lamar substations  | 3                    |
| Replace two existing 345/138-kV transformers at Arcadian Substation with 1-500 MVA transformer   | 5                    |
| Construct second Dunn Road-Egg Harbor 69-kV line   | 4                    |
| Uprate X-12 Town Line Road-Bass Creek 138-kV line to 300 deg F and install a 138/69-kV transformer at Bass Creek Substation  | 3                    |
| Rebuild part of the Y-8 Dane-Dam Heights 69-kV line  | 3                    |
| Replace two existing 138/69-kV transformers at Glenview Substation with 100 MVA transformers   | 4                    |
| Construct Fairwater-Mackford Prairie 69 kV line and a second Ripon - Metomen 69 kV line  | 1                    |
| Replace two existing 138/69-kV transformers at Sunset Point Substation with 100 MVA transformers   | 4                    |
| Uprate Castle Rock-Mckenna 69-kV line  | 1                    |
| Uprate the 138-kV Melissa-Tayco to 229 MVA (300F)  | 4                    |

*Table ZS-5  
ATC Day Ahead Market Most Limiting Elements, 2009*

| Severity Index | Hours (hits)  | Constraint Element                                    | Potential Solution   |
|----------------|---------------|---|--|
| 20.81          | 1,501         | Paddock - Town Line Road 138 kV                       | Paddock - Rockdale 345 kV (Planned 2010)                                 |
| 14.69          | 851           | Minnesota to Wisconsin Exports Interface (MWEX)       | TBD***   |
| 14.34          | 319           | Southwest Wisconsin Interface                         | Construction outages contributed to this constraint                      |
| 7.83           | 797           | Pleasant Prairie - Zion 345 kV                        | Bain - Zion 345 kV line** (economic analysis 2010)                       |
| 7.34           | 829           | Indian Lake 138/69 kV Transformer T2                  | TBD*   |
| 6.73           | 896           | Indian Lake 138/69 kV Transformer T1                  | TBD*   |
| 6.58           | 313           | Granville - Butler 138 kV                             | Elm Rd. Phase 1 (Expected 2009)  |
| 4.88           | 109           | SE Wisconsin Interface                                | TBD**  |
| 4.55           | 386           | Point Beach - Sheboygan Energy Center 345 kV          | Uprate of the Point Beach - Sheboygan 345 kV line (Planned, Spring 2010) |
| 2.47           | 83            | Rocky Run 345/115 kV Transformer T1                   | Monroe County-Council Creek 161 kV (Proposed 2013)                       |
| 2.01           | 196           | Paddock 345/138 kV Transformer T21                    | Paddock - Rockdale 345 kV (Planned 2010)                                 |
| 1.94           | 93            | Point Beach - Forest Junction 345 kV                  | Uprate of the Point Beach - Sheboygan 345 kV line (Planned, Spring 2010) |
| 1.70           | 273           | Flow South PTDF                                       | Conover - Plains 138 kV line (Planned 2010)                              |
| 1.51           | 122           | Arpin - Sigel 138 kV                                  | TBD***   |
| 1.19           | 133           | Nordic - Perch Lake 138 kV                            | Maintenance outages contributed to this constraint                       |
| <b>116.39</b>  | <b>14,025</b> | <b>Total for all ATC Day Ahead constraints - 2009</b> |  |

\* Additional potential solutions being studied as part of 2010 Economic Analysis process: Flow Control Device (Provisional, 2014)

\*\* Additional potential solution being studied as part of 2010 Economic Analysis process: Bain - Zion 345 kV line (Economic Analysis 2010)

\*\*\* Additional potential solutions being studied as part of 2010 Economic Analysis process: North La Crosse – Madison 345 kV (Economic Analysis, 2010)  
Monroe County-Council Creek 161 kV (Proposed 2013)

*Table ZS-6  
ATC Real Time Market Most Limiting Elements, 2009*

| <b>Severity Index</b> | <b>Hours (hits)</b> | <b>Constraint Element</b>                             | <b>Potential Solution</b>  |
|-----------------------|---------------------|---|--|
| 19.78                 | 444                 | Indian Lake 138/69 kV Transformer T2                  | TBD*   |
| 17.75                 | 318                 | Paddock - Town Line Road 138 kV                       | Paddock - Rockdale 345 kV (Planned 2010)   |
| 9.40                  | 130                 | Paddock 345/138 kV Transformer T21                    | Paddock - Rockdale 345 kV (Planned 2010)   |
| 9.33                  | 209                 | Granville - Butler 138 kV                             | Elm Rd. Phase 1 (Expected 2009)  |
| 6.72                  | 162                 | Pleasant Prairie - Zion 345 kV                        | TBD**  |
| 6.29                  | 77                  | Flow South  | Conover - Plains 138 kV line (Planned 2010)  |
| 6.19                  | 74                  | Minnesota to Wisconsin Exports Interface (MWEX)       | TBD***   |
| 3.32                  | 69                  | Rocky Run 345/115 kV Transformer T1                   | Monroe County-Council Creek 161 kV (Proposed 2013)   |
| 2.48                  | 166                 | Werner West - Werner 138 kV                           | New Clintonville - Werner West 138-kV line (Planned 2009)<br>Highway 22 - Morgan 345 kV (Planned 2009) |
| 2.37                  | 70                  | Point Beach - Sheboygan Energy Center 345 kV          | Uprate of the Point Beach - Sheboygan 345 kV line (Planned, Spring 2010)                               |
| 1.89                  | 103                 | Arpin - Sigel 138 kV                                  | TBD***   |
| 1.85                  | 38                  | McCue - Harmony 69 kV                                 | McCue and Lamar Double 69 kV Circuit (Provisional, 2017)   |
| 1.75                  | 44                  | Arena - Spring Green 69 kV                            | Rockdale - West Middleton 345 kV (Planned 2013)  |
| 1.54                  | 165                 | Winona - Twin Lakes 69 kV                             | Maintenance outages contributed to this constraint   |
| 1.47                  | 37                  | Indian Lake 138/69 kV Transformer T1                  | TBD*   |
| <b>110.23</b>         | <b>3,742</b>        | <b>Total for all ATC Real Time constraints - 2009</b> |  |

\* Additional potential solutions being studied as part of 2010 Economic Analysis process: Flow Control Device (Provisional, 2014)

\*\* Additional potential solution being studied as part of 2010 Economic Analysis process: Bain - Zion 345 kV line (Economic Analysis 2010)

\*\*\* Additional potential solutions being studied as part of 2010 Economic Analysis process: North La Crosse – Madison 345 kV (Economic Analysis, 2010)  
Monroe County-Council Creek 161 kV (Proposed 2013)