



# 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  
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## **NERC Compliance**

ATC was fully compliant with the North American Electric Reliability Council (NERC) Reliability Standards in 2008. In 2009 we continue to be committed to maintaining fully compliant status with all of the existing and newly approved NERC standard requirements.

As noted in previous Assessments, ATC is registered with two of the regional reliability compliance entities, the Midwest Reliability Organization (MRO) and the ReliabilityFirst Corporation (RFC). This dual reporting arrangement was established because ATC serves customers that are members in each of these Regional Reliability Organizations.

The new mandatory NERC Reliability Standards assign accountability for specific requirements based on defined entity functions. ATC registered as the following entities - Transmission Owner, Transmission Operator, Transmission Planner and Planning Authority<sup>1</sup>. The following discussion of NERC compliance in this document will focus on ATC's Transmission Planner accountabilities. One purpose of this section is to enhance our ability to provide documentation of ATC compliance with the Transmission Planner accountabilities.

The primary Transmission Planner compliance responsibilities are system performance assessments and system modeling. The system performance assessment standards include checking for exceeded voltage criteria limits, system equipment overloads, adequate stability, cascading outages, loss of load, and firm transfer curtailments under a wide range of system operating conditions.

The Transmission Planning reliability standards call for the consideration of thirty (30) operating conditions. These conditions are grouped into four (4) categories. The requirements associated with each of the applicable categories are contained in four separate NERC Transmission Planning standards:

- A. Normal conditions (Standard TPL-001-0)
- B. Single element contingencies (Standard TPL-002-0)
- C. Multiple element contingencies (Standard TPL-003-0)
- D. Extreme events (Standard TPL-004-0)

ATC has performed assessments annually (from 2001 to 2009), which demonstrated that its portion of the bulk electric system is planned to supply the projected LDC load and firm transmission service for the contingency conditions given in the four applicable NERC Transmission Planning standards. In addition, ATC has performed studies and simulations annually (from 2001 to 2009) that support the 2009 Assessment using the projected LDC load and firm transmission service for the contingency conditions given in the four applicable NERC Transmission Planning standards.

Studies and analyses were performed for the appropriate Category B, Category C, and Category D contingencies. The Category B contingencies that would produce the more severe system results or impacts are described in the TPL-002 Rationale. The Category C contingencies that would produce the more severe system results or impacts are described in the TPL-003 Rationale. The

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<sup>1</sup> NERC has since replaced the Planning Authority function with Planning Coordinator.



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Category D contingencies that would produce the more severe system results or impacts are described in the TPL-004 Rationale.

All of the identified compliance requirements of TPL-001-0, TPL-002-0, TPL-003-0, and TPL-004-0 of the near term (2010 to 2014) Assessment were addressed by the new five-year projects and/or operating procedures that could support our plans to comply with these standards. All of the identified compliance requirements of TPL-001-0, TPL-002-0, and TPL-003-0 of the long term (2015 to 2019) Assessment were addressed by the new 10-year projects and/or operating procedures that could support our plans to comply with these standards

All existing and planned protection systems, including any backup or redundant systems that would be applicable to a given contingency were simulated in studies and analyses. All existing and planned control devices that would be applicable to a given contingency were simulated in studies and analyses. These control devices include transformer automatic tap changers, capacitor bank automatic controls, and six DSMES units. No specific facility outages are scheduled for the planning horizon at the demand levels that were studied. As the future unfolds and facility outages are scheduled, they will be scheduled for conditions that provide acceptable reliability.

The first set of requirements (R1) in each of these standards deals with the frequency, timeframes, simulations, and conditions of the transmission system assessments. Most of the R1 requirements are met by documentation in this 10-Year Assessment (see references below).

Some R1 requirements are met by a combination of this 10-Year Assessment and the documentation in earlier Assessments. For example, the assessments in the 2009 10-Year Assessment are supported by both the system-wide simulations that were used in this Assessment and project-specific simulations that were performed for earlier assessments. Together these supporting simulations were used to revise the assessment of expected system performance in the near-term (1- to 5-year) planning horizon and other system performance in the long-term (6- to 10-year) planning horizon.

The second set of requirements (R2) in each of the four standards deals with the plans that are proposed to achieve the required system performance. Most of the project plans that were noted in the 2008 Assessment remain unchanged in light of the newer assessments. However, the 2009 10-Year Assessment describes project scope and need date changes that are required to achieve compliance based on the latest assessments.

The third set of requirements (R3) in each of the four standards covers documenting and communicating the Assessment and project plans to the MRO and RFC. Taken together, the 2008 Assessment and earlier Assessments fulfill this requirement.

The listing of potential bulk power system reinforcements to address identified near-term and long-term planning horizon needs are provided in Tables PR-2 through PR-23.

Information regarding studies that are specific to generation interconnection requests is described in the Generation interconnections section. Any publicly available generation interconnection



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request details and completed study reports can be accessed through the MISO Web site at [http://oasis.midwestiso.org/documents/ATC/Cluster\\_8\\_Queue.html](http://oasis.midwestiso.org/documents/ATC/Cluster_8_Queue.html)

### *Compliance Documentation in the 2009 10-Year Assessment*

The power system models are derived from cases that were provided by the Multi- Modeling Working Group (MMWG), which prepares cases for industry-wide use. Details regarding the specific system conditions and models that were used in the assessment are given in the Methodology & assumptions section. Additional explanations of the modeling methods and the frequency of system model updating are given in the Model building criteria section of the Planning criteria section.

A complete listing of the planning criteria that we apply, including those which are beyond the NERC, MRO, and RFC planning criteria, can be found in the Planning criteria section.

The system performance assessments for Category A (normal) and Category B (single element contingencies) conditions are given in the Introduction and Reactive power analysis section.

The system performance assessments for Category C (multiple element contingencies) and Category D (extreme event) conditions are contained in the Multiple outage analysis and Reactive power analysis sections.

The compliance requirements dealing with system stability, generator stability, and voltage stability for all four Category (A, B, C, and D) conditions are dealt with in the System stability, Generator stability, and Voltage stability sections.

Descriptions of the system performance studies that are prepared jointly with other interconnection companies, regional groups, or government bodies are given in the Regional analysis section.

### *ATC's 2009 Assessment of Transmission System Performance*

Given the full set of simulations ATC completed for the 2009 Assessment and earlier assessments, ATC assesses its system as being compliant with NERC Standards TPL-001, 2, 3, and 4 for each year 2010 through 2014 and for the rest of the 10-year planning horizon.