Standard Development Roadmap

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

Development Steps Completed:

1. SAC authorized posting TTC/ATC/AFC SAR development June 20, 2005.
2. SAC authorized the SAR to be development as a standard on February 14, 2006.
3. SC appointed a Standard Drafting Team on March 17, 2006.
4. SDT posted first draft for comment from May 25–June 25, 2007

Description of Current Draft:

This is the second draft of the proposed standard posted for stakeholder comments. This draft includes the modifications identified in the SAR with consideration stakeholder comments and applicable FERC directives from FERC Order 693 and Order 890.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. Respond to comments.	February 1, 2008
2. Post for 30-day pre-ballot review.	February 1, 2008
3. First ballot of standard.	March 3, 2008
4. Respond to comments.	April 10, 2008
5. Recirculation ballot.	April 10, 2008
6. 30 Day posting before board adoption.	March 2, 2008
7. Board adopts MOD-001-1.	April 24, 2008

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

Area Interchange Methodology: The Area Interchange methodology is characterized by determination of incremental transfer capability via simulation, from which Total Transfer Capability (TTC) can be mathematically derived. Capacity Benefit Margin, Transmission Reliability Margin, and Existing Transmission Commitments are subtracted from the TTC to derive Available Transfer Capability.

A. Introduction

1. **Title: Area Interchange Methodology**

2. **Number: MOD-028-1**

3. **Purpose:** To increase consistency and transparency in the development and documentation of transfer capability calculations for short-term Transmission services performed by entities using the Area Interchange Methodology to support reliable system operations.

4. **Applicability:**

   4.1. Each Transmission Operator that uses the Area Interchange Methodology to calculate Total Transfer Capabilities (TTCs) for Posted Paths.

   4.2. Each Transmission Service Provider that uses the Area Interchange Methodology to calculate Available Transfer Capabilities (ATCs) for Posted Paths.

5. **Proposed Effective Date:** First day of the first calendar quarter that is twelve months beyond the date that all six (MOD-001-1, MOD-004-1, MOD-008-1, MOD-028-1, MOD-029-1, MOD-030-1)ATC-related standards are approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter that is twelve months beyond the date the set of standards is approved by the NERC Board of Trustees.

B. Requirements

R1. Each Transmission Service Provider shall include in its Available Transfer Capability Implementation Document (ATCID), at a minimum, the following information relative to its methodology for determining TTC: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R1.1. Information describing how the selected methodology has been implemented, in such detail that, given the same information used by the Transmission Operator, the results of the TTC calculations may be validated.

R1.2. A description of the manner in which the Transmission Operator will account for Interchange Schedules in the calculation of TTC.

R1.3. Any contractual obligations for allocation of TTC.

R1.4. A description of the manner in which Contingencies are identified for use in the TTC process.

R2. When calculating TTC for Posted Paths, the Transmission Operator shall use a Transmission model that contains all of the following: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

R2.1. Modeling data and topology of its Reliability Coordinator’s area of responsibility.

R2.2. Modeling data and topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination areas.

R2.3. Facility Ratings specified by the Generator Owners and Transmission Owners.

R3. When calculating TTCs (for intra-day and next-day) for Posted Paths, the Transmission Operator shall include the following data for the Transmission Service Provider's Area, all the following data as provided by adjacent Transmission Service Providers, and any of the following data provided by any other Transmission Service Providers with which coordination agreements have been executed, provided that data can be associated with Facilities that are explicitly represented in the Transmission model: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]

R3.1. For on-peak intra-day TTCs, and next-day intra-peak TTCs, use (at a minimum):

R3.1.1. Expected generation and Transmission outages, additions, and retirements.

R3.1.2. Peak Load forecast for the on-peak period being calculated.

R3.1.3. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.

R3.2. For off-peak intra-day and next-day TTCs, use (at a minimum):

R3.2.1. Expected generation and Transmission outages, additions, and Retirements.

R3.2.2. Peak Load forecast for the off-peak period being calculated.

R3.2.3. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.

R4. When calculating TTCs (for time periods beyond next day) for Posted Paths, the Transmission Operator shall include the following data for the Transmission Service Provider's Area, all the following data as provided by adjacent Transmission Service Providers, and any of the following data provided by any other Transmission Service Providers with which coordination agreements have been executed, provided that data can be associated with Facilities that are explicitly represented in the Transmission model: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R4.1. For days two through 31 TTCs, use (at a minimum):

R4.1.1. Expected generation and Transmission outages, additions, and retirements.

R4.1.2. Peak Load forecast for the day being calculated.

R4.1.3. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.

R4.2. For months two through 13 TTCs, use (at a minimum):

R4.2.1. Expected generation and Transmission outages, additions, and retirements.

R4.2.2. Peak Load forecast for the month calculated.

R4.2.3. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.

R5. When calculating TTCs for Posted Paths, the Transmission Operator shall meet all of the following conditions: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R5.1. Use all Contingencies meeting the criteria described in its ATCID.

R5.2. Respect any contractual allocations of TTC.

R5.3. Include, for each time period, the expected schedules using monthly or longer firm Transmission service, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, for the Transmission Service Provider's Area, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed modeling the source and sink as follows:

- If the source has been specified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the source.
- If the source has been specified in the reservation and the point can be mapped to an "equivalence" modeled in the Transmission Service Provider's Transmission model, use the modeled equivalence as the source.
- If the source has been specified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" modeled in the Transmission Service Provider's Transmission model, use the interface point with the adjacent upstream Transmission Service Provider as the source.
- If the source has not been specified, use the interface point with the adjacent upstream Transmission Service Provider as the source.
- If the sink has been specified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point shall as the sink.
- If the sink has been specified in the reservation and the point can be mapped to an "equivalence" modeled in the Transmission Service Provider's Transmission model, use the modeled equivalence as the sink.

- If the sink has been specified in the reservation and the point can not be mapped to a discretely modeled point or an "equivalence" modeled in the Transmission Service Provider's Transmission model, use the interface point with the adjacent downstream Transmission Service Provider as the sink.
- If the sink has not been specified, use the interface point with the adjacent downstream Transmission Service Provider as the sink.

R6. Each Transmission Operator shall calculate TTC for each Posted Path as defined below, unless otherwise requested by the Transmission Service Provider: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R6.1. At least once per calendar week for TTCs used in hourly, and daily ATC calculations.

R6.2. At least once per calendar month for TTCs used in monthly ATC calculations.

R7. Each Transmission Operator shall calculate TTC for each Posted Path using the following process: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

a. Determine the incremental Transfer Capability for each Posted Path by increasing generation and/or decreasing load within the source Balancing Authority area and decreasing generation and/or increasing load within the sink Balancing Authority area until either:
   - A System Operating Limit is reached on the Transmission Service Provider's system, or
   - A SOL is reached on any other adjacent system in the Transmission model that is not on the study path and the distribution factor is greater than 5%.

b. If the limit in step 'a' can not be reached by adjusting any combination of load or generation, then set the incremental Transfer Capability by the results of the case where the maximum adjustments were applied.

c. Sum the incremental Transfer Capability and all impacts of Firm Transmission Service that were included in the study model.

d. Use (as the TTC) the lesser of:
   - The sum of the incremental Transfer Capability and the impacts of Firm Transmission Service that were included in the study model, or
   - The sum of Facility Ratings of all ties comprising the Posted Path.

e. For Posted Paths whose capacity uses jointly-owned or allocated Facilities, limit TTC for each Transmission Operator so the TTC does not exceed that Transmission Operator's contractual rights.

R8. The Transmission Operator shall provide the Transmission Service Provider of that Posted Path with the most current value for TTC for that Posted Path within seven calendar days of its determination.

R9. When calculating Existing Transmission Commitments (ETCs) for firm commitments (ETC_F) for all time periods for a Posted Path the Transmission Service Provider shall

use the following algorithm: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

$$ETC_F = NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

$NITS_F$ is the firm capacity reserved for Network Integration Transmission Service reserved on Posted Paths that serve as interfaces with other Transmission Service Providers.

GF_F is the capacity reserved for Grandfathered Firm Transmission Service and bundled contracts for energy and Transmission, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "Safe Harbor Tariff" accepted by FERC

PTP_F is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

ROR_F is the capacity reserved for roll-over rights for Firm Transmission Service contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal

OS_F is the capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service, including any other firm adjustments to reflect impacts on other Posted Paths as described in the ATCID.

R10. When calculating ETC for non-firm commitments (ETC_{NF}) for all time periods for a Posted Path the Transmission Service Provider shall use the following algorithm: [Violation Risk Factor: Lower] [Time Horizon: Operations Planning]

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

$NITS_{NF}$ is the non-firm capacity reserved for Network Integration Transmission Service reserved on Posted Paths that serve as interfaces with other Transmission Service Providers.

GF_{NF} is the capacity reserved for Grandfathered Non-Firm Transmission Service and bundled contracts for energy and Transmission, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "Safe Harbor Tariff" accepted by FERC.

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Non-Firm Transmission Service, including any other firm adjustments to reflect impacts on other Posted Paths as described in the ATCID.

R11. When calculating Firm ATC for a Posted Path for a specified period, the Transmission Service Provider shall utilize the following algorithm: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

$$ATC_F = TTC – ETC_F – CBM – TRM + Postbacks_F + Counterflows_F$$

Where:

ATC_F is the firm Available Transfer Capability for the Posted Path for that period,

TTC is the Total Transfer Capability of the Posted Path for that period,

ETC_F is the sum of existing firm Transmission commitments for the Posted Path during that period,

CBM is the Capacity Benefit Margin for the Posted Path during that period,

TRM is the Transmission Reliability Margin for the Posted Path during that period,

$Postbacks_F$ are adjustments to firm ATC due to postbacks for that period, as defined in Business Practices, and

$Counterflows_F$ are adjustments to firm ATC as determined by the Transmission Service Provider and described in their ATCID.

R12. When calculating Non-Firm ATC for a Posted Path for a specified period, the Transmission Service Provider shall use the following algorithm: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

$$ATC_{NF} = TTC – ETC_F - ETC_{NF} – CBM_S – TRM_U + Postbacks_{NF} + Counterflows_{NF}$$

Where:

ATC_{NF} is the non-firm Available Transfer Capability for the Posted Path for that period,

TTC is the Total Transfer Capability of the Posted Path for that period,

ETC_F is the sum of existing firm Transmission commitments for the Posted Path during that period,

ETC_{NF} is the sum of existing non-firm Transmission commitments for the Posted Path during that period,

CBM_S is the Capacity Benefit Margin for the Posted Path that has been scheduled on during that period,

TRM_U is the Transmission Reliability Margin for the Posted Path that has not been released for sale as non-firm capacity by the Transmission Service Provider during that period,

$Postbacks_{NF}$ are adjustments to non-firm ATC due to postbacks for that period, as defined in Business Practices, and

$Counterflows_{NF}$ are adjustments to non-firm ATC as determined by the Transmission Service Provider and described in their ATCID.

C. Measures

M1. Each Transmission Service Provider shall provide its current ATCID that has the information described in R1 to show compliance with R1. (R1)

M2. The Transmission Operator shall provide evidence including the model used to calculate TTC as well as other evidence (such as Facility Ratings provided by facility owners, written documentation, logs, and data) to show that the modeling requirements in R2 were met. (R2)

M3. The Transmission Operator shall provide evidence, including scheduled outages, facility additions and retirements, (such as written documentation, logs, and data) that the data described in R3 and R4 were included in the determination of TTC.(R3) (R4)

M4. The Transmission Operator shall provide the contingencies used in determining TTC and its ATCID as evidence to show that the contingencies described in the ATCID were included in the determination of TTC. (R5)

M5. The Transmission Operator shall provide copies of contracts that contain requirements to allocate TTCs and TTCs to show that any contractual allocations of TTC were respected as required in R5.2. (R5)

M6. The Transmission Operator shall provide evidence (such as copies of coordination agreements, reservations, interchange transactions, or other documentation) to show that monthly or longer reservations were used to estimate scheduled interchange, the modeling of scheduled interchange was based on the rules described in R5.3, and that estimated scheduled interchange was included in the determination of TTC. (R5)

M7. The Transmission Operator shall provide evidence (such as logs and data and dated copies of requests from the Transmission Service Provider to calculate TTCs at specific intervals) that TTCs have been calculated at least once per calendar week for TTCs used in hourly, and daily ATC calculations and at least once per calendar month for TTCs used in monthly ATC calculations per the specifications in R6.(R6)

M8. The Transmission Operator shall provide evidence (such as written documentation) that TTCs have been calculated using the process described in R7. (R7)

M9. The Transmission Operator shall have evidence including a copy of the latest calculated TTC values along with a dated copy of email notices or other equivalent evidence to show that its provided its Transmission Service Provider with the most current values for TTC in accordance with R8.

M10. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Firm ETC used the algorithm and elements described in R9 and did not include any additional elements. (R9)

M11. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Non-Firm ETC used the algorithm and the elements described in R10 and did not include any additional elements. (R10)

M12. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Firm ATC used the algorithm and the elements described in R11 and does not include any additional elements. (R11)

M13. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Non-Firm ATC used the algorithm and the elements described in R12 and does not include any additional elements. (R12)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset

Not applicable.

1.3. Data Retention

- The Transmission Service Provider shall retain its current, in force ATCID and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R1.
- The Transmission Operator shall have its latest model used to calculate TTC and evidence of the previous version to show compliance with R2.
- The Transmission Operator shall retain evidence to show compliance with R3 and R4 for the most recent 12 months or until the model used to calculate TTC is updated, whichever is longer.
- The Transmission Operator shall retain evidence to show compliance with R5, R6, R7 and R8 for the most recent12 months.
- The Transmission Service Provider shall retain evidence to show compliance with R9, R10, R11 and R12 for the most recent12 months.
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.
- The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

E. Regional Variances

None.

F. Associated Documents

Version History

Version	Date	Action	Change Tracking