

When completed, email to: [gerry.cauley@nerc.net](mailto:gerry.cauley@nerc.net)

## Standard Authorization Request Form

Title of Proposed Standard	ATC/TTC/AFC Revisions
Request Date	Revised June 16, 2005

SAR Requestor Information	SAR Type (Put an 'x' in front of one of these selections)	
Name (LTATF) Long Term AFC/ATC Task Force	<input type="checkbox"/>	New Standard
Primary Contact LTATF@nerc.com	<input checked="" type="checkbox"/>	Revision to existing Standard
Telephone Fax	<input type="checkbox"/>	Withdrawal of existing Standard
E-mail	<input type="checkbox"/>	Urgent Action

### Purpose/Industry Need (Provide one or two sentences)

This request changes existing modeling standard(s) by adding a requirement for transmission providers to coordinate the calculation of ATC and requires that specific reliability practices be incorporated into the ATC calculation and coordination methodologies. Such changes will enhance the reliable use of the transmission system without needlessly limiting commercial activity. This request adds a requirement for documentation of the methodologies used to coordinate ATC. In addition, a requirement is added for the enhanced documentation of the calculation methodology.

## Reliability Functions

The Standard will Apply to the Following Functions (Check box for each one that applies by double clicking the grey boxes.)		
<input type="checkbox"/>	Reliability Authority	Ensures the reliability of the bulk transmission system within its Reliability Authority area. This is the highest reliability authority.
<input type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within its metered boundary and supports system frequency in real time
<input type="checkbox"/>	Interchange Authority	Authorizes valid and balanced Interchange Schedules
<input type="checkbox"/>	Planning Authority	Plans the bulk electric system
<input type="checkbox"/>	Resource Planner	Develops a long-term (>1year) plan for the resource adequacy of specific loads within a Planning Authority area.
<input type="checkbox"/>	Transmission Planner	Develops a long-term (>1 year) plan for the reliability of transmission systems within its portion of the Planning Authority area.
<input checked="" type="checkbox"/>	Transmission Service Provider	Provides transmission services to qualified market participants under applicable transmission service agreements
<input type="checkbox"/>	Transmission Owner	Owens transmission facilities
<input type="checkbox"/>	Transmission Operator	Operates and maintains the transmission facilities, and executes switching orders
<input type="checkbox"/>	Distribution Provider	Provides and operates the “wires” between the transmission system and the customer
<input type="checkbox"/>	Generator Owner	Owens and maintains generation unit(s)
<input type="checkbox"/>	Generator Operator	Operates generation unit(s) and performs the functions of supplying energy and Interconnected Operations Services
<input type="checkbox"/>	Purchasing-Selling Entity	The function of purchasing or selling energy, capacity and all necessary Interconnected Operations Services as required
<input type="checkbox"/>	Market Operator	Integrates energy, capacity, balancing, and transmission resources to achieve an economic, reliability-constrained dispatch.
<input type="checkbox"/>	Load-Serving Entity	Secures energy and transmission (and related generation services) to serve the end user

Pending resolution of the FMSCTF, might also apply to Transmission Planner and Planning Authority and Reliability Regions.

## Reliability and Market Interface Principles

<b>Applicable Reliability Principles</b> (Check boxes for all that apply by double clicking the grey boxes.)	
<input checked="" type="checkbox"/>	1. Interconnected bulk electric systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk electric systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk electric systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk electric systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk electric systems.
<input checked="" type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk electric systems shall be trained, qualified and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk electric systems shall be assessed, monitored and maintained on a wide area basis.
<b>Does the proposed Standard comply with all of the following Market Interface Principles?</b> (Select 'yes' or 'no' from the drop-down box by double clicking the grey area.)	
1. The planning and operation of bulk electric systems shall recognize that reliability is an essential requirement of a robust North American economy. Yes	
2. An Organization Standard shall not give any market participant an unfair competitive advantage. Yes	
3. An Organization Standard shall neither mandate nor prohibit any specific market structure. Yes	
4. An Organization Standard shall not preclude market solutions to achieving compliance with that Standard. Yes	
5. An Organization Standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. Yes	

**Detailed Description** (Provide enough detail so that an independent entity familiar with the industry could draft, modify, or withdraw a Standard based on this description.)

Definitions of Terms used in standard:

The Drafting Team should finalize the definitions for TTC, ATC, AFC.

The Drafting Team should finalize the criteria for determining flowgates

The Drafting Team should add a requirement for transmission providers to coordinate the calculation of ATC and require that specific reliability practices be incorporated into the ATC calculation and coordination methodologies.

The Drafting Team should add a requirement for the enhanced documentation of the ATC calculation methodology.

Strawman Definitions from LTATF are contained in the Appendix:

-----  
**Additions/changes from existing standard in green, recommended by LTATF**

**B. Requirements**

MOD-001-0 Requirement 1 (R1). Each group of transmission service providers/and or AFC/ATC/TTC calculators within a region, in conjunction with the members of that region, shall jointly develop and document a TTC and ATC (which may include the calculation of AFC) methodology.

If the transmission service providers/and or AFC/ATC/TTC calculators' AFC, TTC and ATC values are determined by a RTO or ISO, then a jointly developed regional methodology is not required for those members. RRO members not covered by an RTO/ISO would be required to have a jointly developed regional methodology.

Each transmission provider not associated with an RTO or ISO shall comply with the methodology jointly developed by the group of transmission service providers/and or AFC/ATC/TTC calculators within its respective reliability region.

This methodology shall be available to NERC, the Regions, and the stakeholders in the electricity market.

Each TTC and ATC methodology shall:

R1.1 Include a narrative explaining how TTC and ATC values are determined and in evaluating a transmission service request and made available to customers. In addition, an explanation for all items listed here must also be included of any process that produces values that can override the TTC, AFC and ATC values.

R1.2 Account for how the reservations and schedules for firm (non-recallable) and non-firm (recallable) transfers, both within and outside the transmission provider's system,

are included. An explanation must be provided on how reservations that exceed the capability of the specified source point are accounted for. (e.g. 500 MW of transmission service exists in each of three directions sourced from a generator with a capacity of 500 MW).

- R1.3 Account for the ultimate points of power injection (sources) and power extraction (sinks) in TTC and ATC calculations. Source and sink points are further defined in the Source and Sink Points white paper contained in Appendix B of the Final LTATF Report.
- R1.4 Describe how incomplete or so-called partial path transmission reservations are addressed. (Incomplete or partial path transmission reservations are those for which all transmission reservations necessary to complete the transmission path from ultimate source to ultimate sink are not identifiable due to differing reservation priorities, durations, or that the reservations have not all been made.)
- R1.5 Require that ATC values and postings be updated at a minimum frequency to assure proper representation of the transmission system. These values will be made available to stakeholders at a similar frequency.
- R1.6 Indicate the treatment and level of customer demands, including interruptible demands.
- R1.7 Require that the data listed below, and other data needed by transmission providers for the calculation of TTC and ATC values are shared and used. Entities requiring data should request the data as needed. (SAR DT to determine to whom this applies, who supplies – who uses). In addition, specify how this information is coordinated and used to determine TTC and ATC values. If some data is not used or coordinated, provide an explanation. The required minimum update frequency<sup>1</sup> for each item is listed below:
- R1.7.1 **Generation Outage Schedules:** Minimum 13 month time frame includes all generators (SAR DT to determine MW threshold) used in the ATC/AFC calculation). The update frequency is daily.
  - R1.7.2 **Generation dispatch order:** generic dispatch participation factors on a control area/market basis. The update frequency is as required.
  - R1.7.3 **Transmission Outage Schedules:** Minimum 13 month time frame, updated daily for all bulk electric system facilities that impact ATC/AFC calculations; updated once an hour for unscheduled outages. (SAR DT should consider both pending and approved outages)
  - R1.7.4 **Interchange Schedules :** The update frequency is hourly.

---

<sup>1</sup> The update frequency specified should allow for improvements in technology, communication, etc, that might better represent actual system conditions.

**R1.7.5 Transmission Reservations:** The update frequency is daily.

**R1.7.6 Load Forecast:** supplied via the SDX(or similar method), includes hourly data or peak with profile for the next 7-day time frame. The update frequency is daily. In addition, daily peak for day 8 to 30 updated at least daily, and monthly for next 12 months updated monthly.

**R1.7.7 Flowgate AFC:** Firm and non-firm AFC values will be exchanged between entities that have coordination agreements. Unless otherwise specified in the coordination agreement, the minimum update frequency is as follows: Hourly AFC once-per-hour, Daily AFC once-per-day and Monthly AFC once-per-week.

**R1.7.8 Flowgate rating:** Seasonal flowgate ratings will also be provided. Updated as required.

**R1.7.9 Calculation model:** Updated model will be made available to neighboring/affected calculators.

**R1.7.10** Flowgates and flowgate definitions/criteria should be exchanged with neighboring/affected calculators on a seasonal basis, or more often as required to represent actual system conditions.

**(SAR DT should discuss establishing defined criteria for establishing flowgates consistent with regional operating and planning practices)**

R1.8 Describe how the assumptions for and the calculations of TTC and ATC values change over different time (such as hourly, daily, and monthly) horizons.

R1.9 Describe assumptions used for positive impacts and counterflow of transmission reservations, including the basis for the assumptions.

R1.10 Describe assumptions used for generation dispatch for both external and internal systems for base case dispatch and transaction modeling, including the basis for the assumptions.

R1.11 Ensure that the TTC/ATC calculations are consistent with the Transmission Owner's/Transmission Planner's (leave FM designation to SAR DT) planning and operating criteria. (SAR DT: see Appendix E of final LTATF report dealing with consistency with planning criteria)

R1.12 Describe the formal process for the granting of any variances to individual transmission providers from the jointly developed regional TTC/ATC methodology.  
➤ Any variances must be approved by NERC or its designate

R2. The most recent version of the documentation of each TTC and ATC methodology shall be available on a web site accessible by NERC, the Regions, and the stakeholders in the electricity market.

R3. Each TTC and ATC methodology shall address each of the items listed above and shall explain its use in determining TTC and ATC values.

C. Measures.

M1. The Regional Reliability Organization shall provide evidence that its most recent TTC and ATC methodology documentation meets Reliability Standard MOD-001-0\_R1.

M2. The Regional Reliability Organization shall provide evidence that its TTC and ATC methodology is available on a web site accessible by NERC, the Regional Reliability Organizations, and transmission users.

**(SDT to develop procedures for audit to ensure adherence to stated methodology)**

**Moved to appendix per suggestion from SAC**

a)

***Related Standards***

Standard No.	Explanation
MOD-002-0	Review of TTC and ATC Calculations and Results

***Related SARs***

SAR ID	Explanation
T.B.D	LTATF SAR for TRM and CBM (submitted with this SAR)
R05004	NAESB proposed Business Practice for a single Business Practice Standard to be developed related to both:  1) the processing and evaluation of transmission service requests, which use TTC/ATC/AFC and CBM/TRM  2) the processing and evaluation of request(s) to schedule against approved transmission service reservation(s).

***Regional Differences***

<b>Region</b>	<b>Explanation</b>
ECAR	
ERCOT	
FRCC	
MAAC	
MAIN	
MAPP	
NPCC	
SERC	
SPP	
WECC	

***Related NERC Operating Policies or Planning Standards***

<b>ID</b>	<b>Explanation</b>

# Appendix

## **Strawman Definitions from LTATF:**

Total Transfer Capability (TTC):

TTC and ATC are defined in standard 1E1

Existing Transmission Commitments (ETC)

ATC is expressed as:

ATC = TTC – Existing Transmission Commitments ) – CBM – TRM

Flowgate is the name given to the transmission element(s) and associated contingency(ies) if any, that may limit transfer capability.

Flowgate Criteria – to be determined by SDT

Available Flowgate Capability (AFC)

AFC is expressed as:

AFC = [to be finalized by SARDT]

The relationship between ATC and AFC is as follows:

$ATC_{(Path\ A-B)} = AFC_{(Most\ Limiting\ Flowgate\ for\ Path\ A-B)} / Distribution\ Factor_{(Path\ A-B\ on\ Limiting\ Flowgate)}$

Daily, Monthly, Yearly TTC

Daily, Monthly, Yearly ATC

Daily, Monthly, Yearly TRM

Daily, Monthly, Yearly CBM

## **LTATF Suggested Audit Methodology**

M1. Each group of transmission service providers within a region, in conjunction with the members of that region, shall jointly develop and implement a procedure to review periodically (at least annually) and ensure that the TTC and ATC calculations and resulting values of member transmission providers comply with the Regional TTC and ATC methodology, the NERC Planning Standards, and applicable Regional criteria.

M2. A review to verify that the ATC/TTC calculations are consistent with the TO's/TP's planning criteria is also required. The procedure used to verify the consistency must also be documented in the report. Documentation of the results of the most current reviews shall be provided to NERC within 30 Days of completion.

M3. Each entity responsible for the TTC and ATC methodology, in conjunction with its members and stakeholders, shall have and document a procedure on how stakeholders can input their concerns or questions regarding the TTC and ATC methodology and values of the transmission provider(s), and how these concerns or questions will be

addressed. Documentation of the procedure shall be available on a web site accessible by the Regions, NERC, and the stakeholders in the electricity market.

M4. The RRO must review and approve the ATC/TTC methodology to ensure it is consistent with the RRO's Planning and Operating Criteria.

The RRO is responsible for ensuring that TTC and ATC calculations are consistent with the individual TOs/TPs planning criteria.

Each procedure shall specify:

- b) The name, telephone number, and email address of a contact person to whom concerns are to be addressed.
- c) The amount of time it will take for a response.
- d) The manner in which the response will be communicated (e.g., email, letter, telephone, etc.)
- e) What recourse a customer has if the response is deemed unsatisfactory.