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 developed 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.
5. SDT posted second draft for comment from October 31–December 14, 2007.
6. SC Conducted an Initial Ballot of the standard from March 3–12, 2008.

Description of Current Draft:

This is the fourth draft of the proposed standard posted for stakeholder comments. This draft includes consideration of stakeholder comments and applicable FERC directives from FERC Order 693, Order 890, and Order 890-A.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. Posting for 30-day industry comment.	April 16, 2008
2. Respond to Comments.	June 20, 2008
3. Posting for 30-day Pre-Ballot Review.	June 21, 2008
4. Initial Ballot.	July 21, 2008
5. Respond to comments.	August 20, 2008
6. Recirculation ballot.	August 21, 2008
7. 30-day posting before board adoption.	June 21, 2008
8. Board adoption.	September 1, 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.

Flowgate:

1.) A portion of the Transmission system through which the Interchange Distribution Calculator calculates the power flow from Interchange Transactions.

2.) A mathematical construct, comprised of one or more monitored transmission Facilities and optionally one or more contingency Facilities, used to analyze the impact of power flows upon the Bulk Electric System.

Total Flowgate Capability (TFC): The maximum flow capability on a Flowgate, is not to exceed its thermal rating, or in the case of a flowgate used to represent a specific operating constraint (such as a voltage or stability limit), is not to exceed the associated System Operating Limit.

Available Flowgate Capability (AFC): A measure of the flow capability remaining on a Flowgate for further commercial activity over and above already committed uses. It is defined as TFC less Existing Transmission Commitments (ETC), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, and plus counterflows.

Power Transfer Distribution Factor (PTDF): In the pre-contingency configuration of a system under study, a measure of the responsiveness or change in electrical loadings on transmission system facilities due to a change in electric power transfer from one area to another, expressed in percent (up to 100%) of the change in power transfer .

Outage Transfer Distribution Factor (OTDF): In the post-contingency configuration of a system under study, the electric Power Transfer Distribution Factor (PTDF) with one or more system facilities removed from service (outaged).

Flowgate Methodology: The Flowgate methodology is characterized by identification of key Facilities as Flowgates. Total Flowgate Capabilities are determined based on Facility Ratings and voltage and stability limits. The impacts of Existing Transmission Commitments (ETCs) are determined by simulation. The impacts of ETC, Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) are subtracted from the Total Flowgate Capability, and Postbacks and counterflows are added, to determine the Available Flowgate Capability (AFC) value for that Flowgate. AFCs can be used to determine Available Transfer Capability (ATC).

A. Introduction

1. Title: **Flowgate Methodology**

2. Number: **MOD-030-1**

3. Purpose: To increase consistency and reliability in the development and documentation of transfer capability calculations for short-term use performed by entities using the Flowgate Methodology to support analysis and system operations.

4. Applicability:

4.1.1 Each Transmission Operator that uses the Flowgate Methodology to support the calculation of Available Transfer Capabilities (ATCs) for ATC Paths.

4.1.2 Each Transmission Service Provider that uses the Flowgate Methodology to calculate ATCs for ATC Paths.

5. Proposed Effective Date: First day of the first calendar quarter that is twelve months beyond the date that all four standards (MOD-001-1, MOD-028-1, MOD-029-1 and MOD-030-1) are approved by all applicable regulatory authorities.

B. Requirements

R1. The Transmission Service Provider shall include in its "Available Transfer Capability Implementation Document" (ATCID). *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R1.1. The criteria used by the Transmission Operator to identify sets of Transmission Facilities as Flowgates that are to be considered in Available Flowgate Capability (AFC) calculations.

R1.2. The following information on how source and sink for transmission service is accounted for in AFC calculations including:

R1.2.1. Define if the source used for AFC calculations is obtained from the source field or the Point of Receipt (POR) field of the transmission reservation.

R1.2.2. Define if the sink used for AFC calculations is obtained from the sink field or the Point of Delivery (POD) field of the transmission reservation.

R1.2.3. The source/sink or POR/POD identification and mapping to the model.

R1.2.4. If the Transmission Service Provider's AFC calculation process involves a grouping of generators, the ATCID must identify how these generators participate in the group.

R2. The Transmission Operator shall perform the following: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R2.1. Identify Flowgates used in the AFC process based, at a minimum, on the following criteria:

R2.1.1. Results of a first Contingency transfer analysis for ATC Paths internal to a Transmission Operator's system up to the path capability such that at a minimum the first three limiting Elements and their worst associated

Contingency combinations with an OTDF of at least 5% and within the Transmission Operator's system are included as Flowgates.

2.1.1.1. Use first Contingency assumptions consistent with those first Contingencies used in operations studies and planning studies for the applicable time periods, including use of Special Protection Systems.

2.1.1.2. Only the most limiting element in a series configuration needs to be included as a Flowgate.

R2.1.2. Results of a first Contingency transfer analyses from all adjacent Balancing Authority source and sink (as defined in the ATCID) combinations up to the path capability such that at a minimum the first three limiting Elements and their worst associated Contingency combinations with an Outage Transfer Distribution Factor (OTDF) of at least 5% and within the Transmission Operator's system are included as Flowgates unless the interface between such adjacent Balancing Authorities is accounted for using another ATC methodology.

2.1.2.1. Use first Contingency assumptions consistent with those first Contingencies used in operations studies and planning studies for the applicable time periods, including use of Special Protection Systems.

2.1.2.2. Only the most limiting element in a series configuration needs to be included as a Flowgate.

R2.1.3. Any limiting Element/Contingency combination within the Transmission model that has been subjected to an Interconnection-wide congestion management procedure within the last 12 months.

R2.1.4. Any limiting Element/Contingency combination within the Transmission model that has been requested to be included by any other Transmission Service Provider using the Flowgate Methodology or Area Interchange Methodology, where:

2.1.4.1. If the coordination of the limiting Element/Contingency combination is not already addressed through a different methodology, and

- Any generator within the Transmission Service Provider's area has at least a 5% Power Transfer Distribution Factor (PTDF) or Outage Transfer Distribution Factor (OTDF) impact on the Flowgate when delivered to the aggregate load of its own area, or
- A transfer from any Balancing Area within the Transmission Service Provider's area to a Balancing Area adjacent has at least a 5% PTDF or OTDF impact on the Flowgate.
- The Transmission Operator may utilize distribution factors less than 5% if desired.

2.1.4.2. If the limiting Element/Contingency combination is included in the requesting Transmission Service Provider's methodology.

R2.2. At a minimum, establish the list of Flowgates to create, modify, or delete internal Flowgates definitions at least once per calendar year.

R2.3. At a minimum, establish the list of Flowgates to create, modify, or delete external Flowgates that have been requested within thirty calendar days from the request.

R2.4. Establish the TFC of each of the defined Flowgates as equal to:

- For thermal limits, the System Operating Limit (SOL) of the Flowgate.
- For voltage or stability limits, the flow that will respect the SOL of the Flowgate.

R2.5. At a minimum, establish the TFC once per calendar year.

R2.5.1. If notified of a change in the Rating by the Transmission Owner that would affect the TFC of a flowgate used in the AFC process, the TFC should be updated within seven calendar days of the notification.

R2.6. Provide the Transmission Service Provider with the TFCs within seven calendar days of their establishment.

R3. The Transmission Operator shall make available to the Transmission Service Provider a Transmission model to determine Available Flowgate Capability (AFC) that meets the following criteria: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R3.1. Contains generation Facility Ratings, such as generation maximum and minimum output levels, specified by the Generator Owners of the Facilities within the model.

R3.2. Updated at least once per day for AFC calculations for intra-day, next day, and days two through 30.

R3.3. Updated at least once per month for AFC calculations for months two through 13.

R3.4. Contains modeling data and system topology for the Facilities within its Reliability Coordinator's Area. Equivalent representation of radial lines and facilities161kV or below is allowed.

R3.5. Contains modeling data and system topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination Areas.

R4. When calculating AFCs, the Transmission Service Provider shall represent the impact of Transmission Service as follows: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

- If the source, as specified in the ATCID, has been identified 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, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the source.
- If the source, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority

associated with the Transmission Service Provider from which the power is to be received as the source.

- If the source, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source.
- If the sink, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the sink.
- If the sink, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the sink.
- If the sink, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink.
- If the sink, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink.

R5. When calculating AFCs, the Transmission Service Provider shall: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R5.1. Use the models provided by the Transmission Operator.

R5.2. Include in the transmission model expected generation and Transmission outages, additions, and retirements within the scope of the model as specified in the ATCID and in effect during the period calculated for the Transmission Service Provider's area, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed.

R5.3. For external Flowgates, identified in R2.1.3, use the AFC provided by the Transmission Service Provider that calculates AFC for that Flowgate.

R6. When calculating the impact of ETC for firm commitments (ETC_{Fi}) for all time periods for a Flowgate, the Transmission Service Provider shall sum the following: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R6.1. The impact of firm Network Integration Transmission Service, including the impacts of generation to load, in the model referenced in R5.2 for the Transmission Service Provider's area, based on:

R6.1.1. Load forecast for the time period being calculated, including Native Load and Network Service load

R6.1.2. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.

R6.2. The impact of any firm Network Integration Transmission Service, including the impacts of generation to load in the model referenced in R5.2 and has a distribution factor equal to or greater than the percentage[1] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.

R6.2.1. Load forecast for the time period being calculated, including Native Load and Network Service load

R6.2.2. Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.

R6.3. The impact of all confirmed firm Point-to-Point Transmission Service expected to be scheduled, including roll-over rights for Firm Transmission Service contracts, for the Transmission Service Provider's area.

R6.4. The impact of any confirmed firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, including roll-over rights for Firm Transmission Service contracts having a distribution factor equal to or greater than the percentage[2] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.

R6.5. The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.

R6.6. The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage[3] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.

R6.7. The impact of other firm services determined by the Transmission Service Provider.

R7. When calculating the impact of ETC for non-firm commitments (ETC_{NFi}) for all time periods for a Flowgate the Transmission Service Provider shall sum: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R7.1. The impact of all confirmed non-firm Point-to-Point Transmission Service expected to be scheduled for the Transmission Service Provider's area.

R7.2. The impact of any confirmed non-firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions

[1] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

[2] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

[3] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

using Transmission service from multiple Transmission Service Providers, that have a distribution factor equal to or greater than the percentage[4] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.

R7.3. The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.

R7.4. The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage[5] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider for all adjacent Transmission Service Providers, and any other Transmission Service Providers with which coordination agreements have been executed.

R7.5. The impact of non-firm Network Integration Transmission Service serving Load within the Transmission Service Provider's area (i.e., secondary service), to include load growth, and losses not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

R7.6. The impact of any non-firm Network Integration Transmission Service (secondary service) with a distribution factor equal to or greater than the percentage[6] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.

R7.7. The impact of other non-firm services determined by the Transmission Service Provider.

R8. When calculating firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

$$AFC_F = TFC - ETC_{Fi} - CBM_i - TRM_i + Postbacks_{Fi} + counterflows_{Fi}$$

Where:

AFC_F is the firm Available Flowgate Capability for the Flowgate for that period.

TFC is the Total Flowgate Capability of the Flowgate.

ETC_{Fi} is the sum of the impacts of existing firm Transmission commitments for the Flowgate during that period.

CBM_i is the impact of the Capacity Benefit Margin on the Flowgate during that period.

[4] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

[5] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

[6] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

TRM_i is the impact of the Transmission Reliability Margin on the Flowgate during that period.

$Postbacks_{Fi}$ are changes to firm AFC due to a change in the use of Transmission Service for that period, as defined in Business Practices.

$counterflows_{Fi}$ are adjustments to firm AFC as determined by the Transmission Service Provider and specified in their ATCID.

R9. When calculating non-firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$AFC_{NF} = TFC - ETC_{Fi} - ETC_{NFi} - CBM_{Si} - TRM_{Ui} + Postbacks_{NFi} + counterflows$$

Where:

AFC_{NF} is the non-firm Available Flowgate Capability for the Flowgate for that period.

TFC is the Total Flowgate Capability of the Flowgate.

ETC_{Fi} is the sum of the impacts of existing firm Transmission commitments for the Flowgate during that period.

ETC_{NFi} is the sum of the impacts of existing non-firm Transmission commitments for the Flowgate during that period.

CBM_{Si} is the impact of any schedules during that period using Capacity Benefit Margin.

TRM_{Ui} is the impact on the Flowgate of the Transmission Reliability Margin that has not been released (unreleased) for sale as non-firm capacity by the Transmission Service Provider during that period.

$Postbacks_{NF}$ are changes to non-firm Available Flowgate Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

$counterflows_{NF}$ are adjustments to non-firm AFC as determined by the Transmission Service Provider and specified in their ATCID.

R10. Each Transmission Service Provider shall recalculate AFC, utilizing the updated models described in R3.3, R3.4, and R5, at a minimum on the following frequency: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R10.1. For hourly AFC, once per hour.

R10.2. For daily AFC, once per day.

R10.3. For monthly AFC, once per week.

R11. When converting Flowgate AFCs to ATCs (and TFCs to TTCs) for ATC Paths, the Transmission Service Provider shall convert those values based on the following algorithm: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

$$\mathbf{TC = min(P)}$$

$$\mathbf{P = \{PTC_1, PTC_2, \ldots PTC_n\}}$$

$$PTC_n = \frac{FC_n}{DF_{np}}$$

Where:

TC is the Transfer Capability (either 'Available' or 'Total').

P is the set of partial Transfer Capabilities (either available or total) for all "impacted" Flowgates honored by the Transmission Service Provider; a Flowgate is considered "impacted" by a path if the Distribution Factor for that path is greater than the percentage[7] used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider on an OTDF Flowgate or PTDF Flowgate.

$\mathbf{PTC_n}$ is the partial Transfer Capability (either 'Available' or 'Total') for a path relative to a Flowgate *n.*

$\mathbf{FC_n}$ is the Flowgate Capability ('Available' or 'Total') of a Flowgate *n*.

$\mathbf{DF_{np}}$ is the distribution factor for Flowgate *n* relative to path *p*.

C. Measures

M1. Each Transmission Service Provider shall provide its ATCID and other evidence (such as written documentation) to show that its ATCID contains the criteria used by the Transmission Operator to identify sets of Transmission Facilities as Flowgates that are to be considered in AFC calculations. (R1)

M2. The Transmission Operator shall provide evidence (such as studies and working papers) that all Flowgates that meet the criteria described in R2.1 are considered in its AFC calculations. (R2.1)

M3. The Transmission Operator shall provide evidence (such as logs) that it updated its list of Flowgates at least once per calendar year. (R2.2)

M4. The Transmission Operator shall provide evidence (such as logs and dated requests) that it updated the list of Flowgates within thirty calendar days from a request. (R2.3)

M5. The Transmission Operator shall provide evidence (such as data or models) that it determined the TFC for each Flowgate as defined in R2.4. (R2.4)

M6. The Transmission Operator shall provide evidence (such as logs) that it updated the TFCs for each Flowgate at least once per calendar year. (R2.5)

M7. The Transmission Operator shall provide evidence (such as logs and electronic communication) that it provided the Transmission Service Provider with updated TFCs within seven calendar days of their determination. (R2.6)

M8. The Transmission Operator shall provide evidence (such as written documentation, logs, models, and data) that the Transmission model used to determine AFCs contains the information specified in R3. (R3)

M9. The Transmission Service Provider shall provide evidence (such as written documentation and data) that the modeling of point-to-point reservations was based on the rules described in R4. (R4)

[7] A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

M10. The Transmission Service Provider shall provide evidence including the models received from Transmission Operators and other evidence (such as documentation and data) to show that it used the Transmission Operator's models in calculating AFC. (R5.1)

M11. The Transmission Service Provider shall provide evidence (such as written documentation, electronic communications, and data) that all expected generation and Transmission outages, additions, and retirements were included in the AFC calculation as specified in the ATCID. (R5.2)

M12. The Transmission Service Provider shall provide evidence (such as logs, electronic communications, and data) that AFCs provided by third parties on external Flowgates were used instead of those calculated by the Transmission Operator. (R5.3)

M13. The TSP must be capable of demonstrating that for any calculation of firm ETC made in the previous sixty days, the Transmission Service Provider can recalculate the individual value of the firm ETC for a specific time period as described in (MOD-001 R2), using the requirements defined in R6 and with data used to calculate this specified value for the designated hour. The data used must meet the requirements specified in the standard and the ATCID, and the audited value must be within +/- 15% or 15 MW, whichever is greater, of the demonstrated result. (R6)

M14. The TSP must be capable of demonstrating that for any calculation of non-firm ETC made in the previous sixty days, the Transmission Service Provider can recalculate the individual value of the non-firm ETC for a specific time period as described in (MOD-001 R2), using the requirements defined in R7 and with data used to calculate this specified value for the designated hour. The data used must meet the requirements specified in the standard and the ATCID, and the audited value must be within +/- 15% or 15 MW, whichever is greater, of the demonstrated result. (R7)

M15. Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates firm AFCs, as required in R8. Such documentation must show that only the variables allowed in R8 were used to calculate firm AFCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc…). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R8)

M16. Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates non-firm AFCs, as required in R9. Such documentation must show that only the variables allowed in R9 were used to calculate non-firm AFCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc…). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R9)

M17. The Transmission Service Provider shall provide evidence (such as documentation, dated logs, and data) that it calculated ATC on the frequency defined in R10. (R10)

M18. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Transfer Capabilities follows the procedure described in R11. (R11)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

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 to determine flowgates and TFC and evidence of the previous version to show compliance with R2 and R3.
- The Transmission Operator shall retain evidence to show compliance with R2.1, R2.3 for the most recent 12 months.
- The Transmission Operator shall retain evidence to show compliance with R2.2, R2.4 and R2.5 for the most recent three calendar years plus current year.
- The Transmission Service Provider shall retain evidence to show compliance with R4 for 12 months or until the model used to calculate AFC is updated, whichever is longer.
- The Transmission Service Provider shall retain evidence to show compliance with R5, R8, R9, R10, and R11 for the most recent calendar year plus current year.
- The Transmission Service Provider shall retain evidence to show compliance with R6 and R7 for the most recent sixty days.
- 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

R #	Lower VSL	Moderate	High VSL	Severe VSL
R1.	The Transmission Service Provider does not include in its ATCID one or two of the sub-requirements listed under R1.2, or the subrequirement is incomplete.	The Transmission Service Provider does not include in its ATCID three of the sub-requirements listed under R1.2, or the subrequirement is incomplete.	The Transmission Service Provider does not include in its ATCID the information described in R1.1. **OR** The Transmission Service Provider does not include in its ATCID the information described in R1.2 (1.2.1, 1.2.2., 1.2.3, and 1.2.4 are missing).	The Transmission Service Provider does not include in its ATCID the information described in R1.1 and R1.2 (1.2.1, 1.2.2., 1.2.3, and 1.2.4 are missing).
R2.	The Transmission Operator established its list of internal Flowgates less frequently than once per calendar year, but not more than three months late as described in R2.2. **OR** The Transmission Operator established its list of external Flowgates more than thirty days, but not more than sixty calendar days, following a request to create, modify or delete an external flowgate as described in R2.3. **OR** The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs within seven	The Transmission Operator did not include a Flowgate in their AFC calculations that met the criteria described in R2.1. **OR** The Transmission Operator established its list of internal Flowgates more than three months late, but not more than six months late as described in R2.2. **OR** The Transmission Operator established its list of external Flowgates more than 60 calendar days, but not more than ninety calendar days, following a request to create, modify or delete an external	The Transmission Operator did not include two to five Flowgates in their AFC calculations that met the criteria described in R2.1. **OR** The Transmission Operator established its list of internal Flowgates more than six months late, but not more than nine months late as described in R2.2. **OR** The Transmission Operator established its list of external Flowgates more than ninety days, but not more than 120 calendar days, following a request to create, modify or delete an external flowgate as	The Transmission Operator did not include six or more Flowgates in its AFC calculations that met the criteria described in R2.1. **OR** The Transmission Operator established its list of internal Flowgates more than nine months late as described in R2.2. **OR** The Transmission Operator did not establish its list of internal Flowgates as described in R2.2. **OR** The Transmission Operator established its list of external

R #	Lower VSL	Moderate	High VSL	Severe VSL
	calendar days of their determination, but is has not been more than 14 calendar days since their determination.	flowgate as described in R2.3. **OR** The Transmission Operator has not updated its Flowgate TFCs at least once within a calendar year, and it has been not more than 15 months since the last update. **OR** The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 14 calendar days of their determination, but is has not been more than 21 calendar days since their determination.	described in R2.3. **OR** The Transmission Operator has not updated its Flowgate TFCs at least once within a calendar year, and it has been more than 15 months but not more than 18 months since the last update. **OR** The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 21 calendar days of their determination, but is has not been more than 28 calendar days since their determination.	Flowgates more than 120 calendar days following a request to create, modify or delete an external flowgate as described in R2.3. **OR** The Transmission Operator did not establish its list of external Flowgates following a request to create, modify or delete an external flowgate as described in R2.3. **OR** The Transmission Operator has not updated its list of internal Flowgates for two or more consecutive years. **OR** The Transmission Operator did not determine the TFC for a flowgate as described in R2.4. **OR** The Transmission Operator has not updated its Flowgate TFCs at least once within a calendar year, and it has been more than 18 months since the last update. **OR** The Transmission Operator has

R #	Lower VSL	Moderate	High VSL	Severe VSL
				not provided its Transmission Service Provider with its Flowgate TFCs in more than 28 calendar days of their determination.
R3.	The Transmission Operator used one to ten Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. Note: A modeling error (a violation of the criteria in R3.1, R3.4, or R3.5) is a single violation, regardless how many times that error has been modeled.	The Transmission Operator used 11 to 20 Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. Note: A modeling error (a violation of the criteria in R3.1, R3.4, or R3.5) is a single violation, regardless how many times that error has been modeled.	The Transmission Operator used 21 to 30 Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. Note: A modeling error (a violation of the criteria in R3.1, R3.4, or R3.5) is a single violation, regardless how many times that error has been modeled.	The Transmission Operator used a Transmission model that had not been updated per the schedule specified in R3. **OR** The Transmission Operator used more than 30 Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. **OR** The Transmission operator did not include in the Transmission model detailed modeling data and topology for its own Reliability Coordinator area. **OR** The Transmission operator did not include in the Transmission model detailed modeling data and topology at least three contiguous busses of the BES for more than one adjacent Reliability Coordinator area.

R #	Lower VSL	Moderate	High VSL	Severe VSL
				Note: A modeling error (a violation of the criteria in R3.1, R3.4, or R3.5) is a single violation, regardless how many times that error has been modeled.
R4.	The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than zero, but not more than 5% of all reservations; or more than zero, but not more than 1 reservation, whichever is greater.	The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 5%, but not more than 10% of all reservations; or more than 1, but not more than 2 reservations, whichever is greater.	The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 10%, but not more than 15% of all reservations; or more than 2, but not more than 3 reservations, whichever is greater.	The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 15% of all reservations; or more than 3 reservations, whichever is greater.
R5.	The Transmission Service Provider did not include in the AFC process one to ten expected generation or Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	The Transmission Service Provider did not include in the AFC process eleven to twenty-five expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	The Transmission Service Provider did not include in the AFC process twenty-six to fifty expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	The Transmission Service Provider did not use the model provided by the Transmission Operator. **OR** The Transmission Service Provider did not include in the AFC process more than fifty expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID. **OR** The Transmission Service provider did not use AFC

R #	Lower VSL	Moderate	High VSL	Severe VSL
				provided by a third party.
R6.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15 MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25 MW, whichever is greater..	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25 MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35 MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35 MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45 MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45 MW, whichever is greater.
R7.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15 MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25 MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25 MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35 MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35 MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45 MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45 MW, whichever is greater.
R8.	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more

R #	Lower VSL	Moderate	High VSL	Severe VSL
	than zero Flowgates, but not more than 5% of all Flowgates or 1 Flowgate (whichever is greater).	than 5% of all Flowgates or 1 Flowgates (whichever is greater), but not more than 10% of all Flowgates or 2 Flowgates (whichever is greater).	than 10% of all Flowgates or 2 Flowgates (whichever is greater), but not more than 15% of all Flowgates or 3 Flowgates (whichever is greater).	than 15% of all Flowgates or more than 3 Flowgates (whichever is greater).
R9.	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm AFC, or used additional elements, for more than zero Flowgates, but not more than 5% of all Flowgates or 1 Flowgate (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 5% of all Flowgates or 1 Flowgate (whichever is greater), but not more than 10% of all Flowgates or 2 Flowgates (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 10% of all Flowgates or 2 Flowgates (whichever is greater), but not more than 15% of all Flowgates or 3 Flowgates (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 15% of all Flowgates or more than 3 Flowgates (whichever is greater).
R10	For Hourly, the Transmission Service provider did not calculate for more than 24 hours but not more than 48 hours. **OR** For Daily, the Transmission Service provider did not calculate for more than 7 calendar days but not more than 14 calendar days. **OR** For Monthly, the Transmission Service provider did not calculate for 31 or more	For Hourly, the Transmission Service provider did not calculate for more than 48 hours but not more than 72 hours. **OR** For Daily, the Transmission Service provider did not calculate for more than 14 calendar days but not more than 21 calendar days. **OR** For Monthly, the Transmission Service provider did not calculate for 60 or more	For Hourly, the Transmission Service provider did not calculate for more than 72 hours but not more than 96 hours. **OR** For Daily, the Transmission Service provider did not calculate for more than 21 calendar days but not more than 28 calendar days. **OR** For Monthly, the Transmission Service provider did not calculate for 90 or more	For Hourly, the Transmission Service provider did not calculate for more than 96 hours. **OR** For Daily, the Transmission Service provider did not calculate for more than 28 calendar days. **OR** For Monthly, the Transmission Service provider did not calculate for 120 or more calendar days.

R #	Lower VSL	Moderate	High VSL	Severe VSL
	calendar days, but less than 60 calendar days.	calendar days, but less than 90 calendar days.	calendar days, but less than 120 calendar days.	
R11.	N/A	N/A	N/A	The Transmission Service Provider did not follow the procedure for determining Transfer Capabilities described in R11.

E. Regional Variances

None.

Version History

Version	Date	Action	Change Tracking