

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
5. SDT posted second draft for comment from October 31–December 14, 2007.

Description of Current Draft:

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

Future Development Plan:

Anticipated Actions	Anticipated Date
1. First ballot of standard.	March 7, 2008
2. Respond to comments.	April 22, 2008
3. Recirculation ballot.	April 22, 2008
4. 30-day posting before board adoption.	March 7, 2008
5. Board adoption.	May 5, 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 designated point on~~ 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 ~~that will respect all~~ System Operating Limits ~~for that Flowgate~~.

Available Flowgate Capability (AFC): ~~A measure of t~~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 (including retail customer service), less a Capacity Benefit Margin, and less a Transmission Reliability Margin.

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 a specific ~~system facility-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-Facility ratings~~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 Transmission~~ Flowgate Capability to determine the Available Flowgate Capability (AFC) value for that Flowgate. AFCs are used to determine Available ~~Transfer Transmission~~ Capability (ATC).

A. Introduction

1. **Title:** Flowgate Methodology
2. **Number:** MOD-030-1
3. **Purpose:** To increase consistency and ~~transparency~~ reliability in the development and documentation of transfer capability calculations for short-term ~~Transmission services~~ use performed by entities using the Flowgate Methodology to support ~~reliable analysis and~~ reliable 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 Posted~~ Paths.
 - 4.1.2 Each Transmission Service Provider that uses the Flowgate Methodology to calculate ATCs for ~~Posted-ATC~~ 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, and 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.** The Transmission Service ~~provider~~ Provider shall include in its “Available Transfer Capability Implementation Document” (ATCID) ~~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.~~ [*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 ATC calculations including:
- R1.2.1.** Define if the source used for ATC 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 ATC 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 ATC 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* Medium] [*Time Horizon: Operations Planning*]

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

~~R2.1.1. Results of a first Ceontingency transfer analysis for ATC Paths internal to a~~
~~Transmission's Oøperator's system up to the path capability such that at a~~
~~minimum the first three limiting Eeement/Ceontingency combinations~~
~~with an OTDF greater than 3% and within the Transmission Operator's~~
~~system are included as Flowgates.~~

~~2.1.1.1. Use Contingency assumptions consistent with those used in~~
~~operations studies and planning studies for the applicable time~~
~~periods.~~

~~R1.1.1. Any Facility within the Transmission Operator's area based on thermal,~~
~~stability or voltage limits is a Flowgate.~~

R2.1.2. Results of a first cAll 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/Contingency combinations with an Outage Transfer Distribution Factor (OTDF) greater than 3% 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 Contingency assumptions~~Contingeneies~~ consistent with those~~the Contingeneies~~ used in operations studies and planning studies for the applicable time periods.

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.~~OR 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~~

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.
- R2.2. At a minimum, update the list of Flowgates to create, modify, or delete internal Flowgates definitions at least once per calendar yearquarter.
- R2.3. At a minimum, update the list of Flowgates to create, modify, or delete external Flowgates that have been requested within thirty calendar days from the request.
- R2.4. Determine 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, update the TFC once per calendar year.
 - R2.5.1. If notified of a change in the Rating by the Transmission Owner the TFC should be updated within seven calendar days of the notification.
- R2.6. Provide the Transmission Service Provider with the updated TFCs within seven calendar days of their determination.
- R3. The Transmission Operator shall make available to the Transmission Service Provider a~~use a~~ Transmission model to determine Available Flowgate Capability (AFC) that meets the following criteria: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]
 - R3.1. Contains Facility Ratings specified by the Transmission Owners and 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 facilities 161kV or below is allowed.
 - ~~R2.5.~~Contains modeling data and system topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination Areas for at least three contiguous busses of the Bulk Electric System directly and synchronously connected to the tie lines into the systems of each adjacent Reliability Coordinator Area.
 - ~~R3.5.~~ Contains modeling data and topology (or equivalent representation) for synchronous Facilities beyond three busses.
- R4. When calculating AFCs, the Transmission Service Provider shall represent the impact of Transmission Service as follows~~Use assumptions consistent with the assumptions used in operations studies and planning studies for the applicable time periods, including:~~ [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
 - ~~R3.1.~~Contingencies.
 - ~~R3.2.~~Modeling the impact of point-to-point reservations as follows:
 - If the source, as specified in the ATCID, has been ~~specified~~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~~specified in the reservation and the point can be mapped to an “equivalence” or “aggregate” representation modeled 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~~specified in the reservation and the point cannot be mapped to a discretely modeled point or an “equivalence” representation modeled in the Transmission Service Provider’s Transmission model, use the ~~immediately interface point with the~~ adjacent Balancing Authority associated with the upstream 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~~specified, in the reservation use the ~~immediately interface point with the~~ adjacent Balancing Authority associated with the upstream 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~~specified 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~~specified in the reservation and the point can be mapped to an “equivalence” or “aggregate” representation modeled 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~~specified in the reservation and the point can-not be mapped to a discretely modeled point or an “equivalence” representation modeled in the Transmission Service Provider’s Transmission model, use the ~~immediately adjacent Balancing Authority associated~~interface point with the ~~adjacent downstream~~-Transmission Service Provider receiving the power as the sink.
- If the sink, as specified in the ATCID, has not been ~~identified~~ specified, in the reservation use the ~~immediately adjacent Balancing Authority associated~~ interface point with the ~~adjacent downstream~~-Transmission Service Provider receiving the power as the sink.

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

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

R5.1.R5.2. Include all 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.

R5.2.R5.3. For external (~~third party~~) Flowgates, identified in R2.1.3, use ~~any the~~ AFC for ~~each specific Flowgate~~ provided by ~~that the~~ Transmission Service Provider that calculates AFC for that Flowgate~~third party as the 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: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]

R6.1. The impact of Firm Network ~~Integration Transmission and Native Load~~ Service, including the impacts of base generation to load, for the Transmission Service Provider's area, all adjacent Transmission Service Providers, and any other Transmission Service Providers with which coordination agreements have been executed, based on:

R6.1.1. For on-peak intra-day and on-peak next-day AFCs:

6.1.1.1. ~~Peak~~-Load forecast for the on-peak period calculated, consistent with that used for planning and operations for applicable time periods, including ~~native~~-Native load-~~Load~~ and network service ~~load~~-Load

6.1.1.2. 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 they are expected to run as specified by the Transmission Service Provider's ATCID.

R6.1.2. For off-peak intra-day and off-peak next-day AFCs:

6.1.2.1. ~~Peak~~-Load forecast for the off-peak period calculated, consistent with that used for planning and operations for applicable time periods, including Native Load and network service ~~Load~~-Load.

6.1.2.2. 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 they are expected to run as specified by the Transmission Service Provider's ATCID.

R6.1.3. For days two through 31 AFCs:

~~6.1.3.1.~~ **6.1.3.1.** ~~Peak~~-Load forecast for the day calculated, consistent with that used for planning and operations for applicable time periods, including ~~native~~-Native load-~~Load~~ and network service ~~load~~-Load.

6.1.3.2. 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 they are expected to run as specified by the Transmission Service Provider's ATCID.

R6.1.4. For months two through 13 AFCs:

6.1.4.1. ~~Peak~~-Load forecast for the month calculated, consistent with that used for planning and operations for applicable time periods, including ~~native~~-Native load-~~Load~~ and network service ~~load~~-Load.

6.1.4.2. 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 they are expected to run as specified by the Transmission Service Provider's ATCID.

R6.2. The impact of any firm Network Integration Transmission Service, including the impacts of base generation to load and has a distribution factor equal to or greater than the percentage¹ used to curtail in the Interconnection-wide congestion

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

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.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 not included in the model.

R6.3.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, not included in the model and having a distribution factor equal to or greater than the percentage² used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider in excess of 3% for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed. ~~The impact of any Grandfathered firm contracts expected to be scheduled for the Transmission Service Provider's area not included in the model.~~

R6.5. The impact of any Grandfathered firm ~~obligation~~contracts expected to be scheduled ~~or expected to flow not included in the model in excess of 3%~~ for all adjacent ~~the~~ Transmission Service Provider's ~~area not included in the model~~ and any other ~~Transmission Service Providers with which coordination agreements have been executed.~~

R6.6. The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow that are not included in the model and having a distribution factor equal to or greater than the percentage³ 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.

R5.4.

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 that are not included in the model 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 using Transmission service from multiple Transmission Service Providers, that are not included in the model and have a distribution factor equal to or greater than the percentage⁴ used to curtail in the Interconnection-wide congestion management

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.

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

~~procedure used by the Transmission Service Provider in excess of 3%~~ 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 that are ~~contracts~~ not included in the model 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 are ~~contracts~~ not included in the model ~~and have a distribution factor equal to or greater than the percentage⁵ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider in excess of 3%~~ 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~~ i.e., secondary Sservice), 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 percentage⁶ 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.

~~**R6.4.**~~

R8. When calculating firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Medium*] [*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_z.

TFC is the Total Flowgate Capability of the Flowgate_z.

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

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

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

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.

~~Postbacks_{Fi} are adjustments-changes to firm AFC due to a change in the use of Firm Transmission Servicepostbacks for that period, as defined in Business Practices,-and.~~

~~Counterflows_{Fi} are adjustments to firm ATC-AFC as determined by the Transmission Service Provider and described-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:

~~ATC_{NF} is the non-firm Available Flowgate Capability for the Posted-ATC Path 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 adjustments-changes to non-firm Available Flowgate Capability due to to-a change in the use of Non-Firm Transmission Servicepostbacks for that period, as defined in business-Business practicesPractices.~~

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

- R10.** Each Transmission Service Provider shall recalculate AFC at a minimum on the following frequency: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

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

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

R10.3. For monthly ATC, once a month.

- M1.R11.** When converting Flowgate AFCs to ATCs (and TFCs to TTCs) for ATC Paths, the Transmission Service Provider shall convert those valuesFlowgate AFCs to ATCs (and TFCs to TTCs) for Posted Paths based on the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$TC = \min\{PTC_1, PTC_2, \dots, PTC_n\} \text{ and } PTC_n = \frac{FC_n}{DF_{np}}$$

$$TC = \min(P)$$

$$P = \{PTC_1, PTC_2, \dots, PTC_n\}$$

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

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 3% on an OTDF Flowgate or PTDF Flowgate.

PTC_n is the partial Transfer Capability (either ‘Available’ or ‘Total’) for a path relative to a Flowgate *n*.

FC_n is the Flowgate Capability (‘Available’ or ‘Total’) of a Flowgate *n*.

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~~quarter~~. (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)
- M4.M5.** The Transmission Operator shall provide evidence (such as data and models) that it determined the TFC for each Flowgate as defined in R2.34. (R2.34)
- M5.M6.** The Transmission Operator shall provide evidence (such as logs) that it updated the TFCs for each Flowgate at least once per calendar year. (R2.45)
- M6.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. (R2.56)
- M7.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 studies) that the assumptions used in AFC calculation were consistent with those used in operations and planning studies for the same period. (R4.1)~~ 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)

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)

M10.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. (R5.42)

M11.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. (R5.23)

M12.M13. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of firm ETC included the elements described in R6. ~~and did not include any additional elements.~~(R6)

M13.M14. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of non-firm ETC included the elements described in R7 ~~and did not include any additional elements.~~ (R7)

M14.M15. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of firm AFC used the algorithm and the elements described in R8 and did not include any additional elements. Note that variables may legitimately be zero if the value is not applicable or calculated to be zero. (R8)

M15.M16. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of non-firm AFC used the algorithm and the elements described in R9 and did not include any additional elements. Note that variables may legitimately be zero if the value is not applicable or calculated to be zero. (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)

M16.M18. The Transmission Service Provider shall provide evidence (such as documentation and data) that the determination of Transfer Capabilities follows the procedure described in R10~~1.~~ (~~R10~~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 calculate TTC 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 TTC is updated, whichever is longer.
- The Transmission Service Provider shall retain evidence to show compliance with R5, R6, R7, R8, R9, and R10 for the most recent calendar year plus current year.
- 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.	N/A	N/A	<p><u>The Transmission Service Provider does not include in its ATCID the information described in R1.1.</u></p> <p>OR</p> <p><u>The Transmission Service Provider does not include in its ATCID the information described in R1.2.</u></p> <p>N/A</p>	<p>The Transmission Service Provider does not include in its ATCID the criteria for identifying Flowgates to be considered in AFC calculations information described in R1.1 and R1.2.</p>
R2.	<p>The Transmission Operator has not updated its list of <u>external</u> Flowgates for more than two consecutive quarters but not more than three consecutive quarters.</p> <p>OR</p> <p>The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs within seven days (one week) of their determination, but is has not been more than 14 days (two weeks) since their determination.</p>	<p>The Transmission Operator did not include a Flowgate in their AFC calculations that met the criteria described in R2.1.</p> <p>OR</p> <p>The Transmission Operator has not updated its list of <u>external</u> Flowgates for more than three but not more than four consecutive quarters.</p> <p>OR</p> <p>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.</p> <p>OR</p> <p>The Transmission Operator has not provided its Transmission Service Provider</p>	<p>The Transmission Operator did not include two to five Flowgates in their AFC calculations that met the criteria described in R2.1.</p> <p>OR</p> <p>The Transmission Operator has not updated its list of <u>external</u> Flowgates for more than four but not more than five consecutive quarters.</p> <p>OR</p> <p>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.</p> <p>OR</p> <p>The Transmission Operator</p>	<p>The Transmission Operator did not include six or more Flowgates in their AFC calculations that met the criteria described in R2.1.</p> <p>OR</p> <p>The Transmission Operator has not updated its list of <u>external</u> Flowgates for more than five consecutive quarters.</p> <p>OR</p> <p><u>The Transmission Operator has not updated its list of internal Flowgates for two or more consecutive years.</u></p> <p>OR</p> <p>The Transmission Operator did not determine the TFC for a flowgate as described in</p>

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R #	Lower VSL	Moderate	High VSL	Severe VSL
		with its Flowgate TFCs in more than 14 days (two weeks) of their determination, but is has not been more than 21 days (three weeks) since their determination.	has not provided its Transmission Service Provider with its Flowgate TFCs in more than 21 days (three weeks) of their determination, but is has not been more than 28 days (four weeks) since their determination.	<p>R2.34.</p> <p>OR</p> <p>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.</p> <p>OR</p> <p>The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 28 days (4 weeks) of their determination.</p>
R3.	<p>The Transmission Operator used <u>one to ten</u> Facility Ratings that were different from those specified by a Transmission <u>or Generator</u> Owner in their Transmission model and one of those Facility Ratings was used (or should have been used) to establish a TFC for one or more flowgates.</p> <p><u>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.</u></p>	<p>The Transmission Operator used <u>eleven to twenty</u> Facility Ratings that were different from those specified by a Transmission <u>or Generator</u> Owner in their Transmission model and two to five of those Facility Ratings were used (or should have been used) to establish a TFC for one or more flowgates.</p> <p><u>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.</u></p>	<p>The Transmission Operator used <u>twenty-one to thirty</u> Facility Ratings that were different from those specified by a Transmission <u>or Generator</u> Owner in their Transmission model and six to ten of those Facility Ratings were used (or should have been used) to establish a TFC for one or more flowgates.</p> <p><u>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.</u></p>	<p>The Transmission Operator did not update the Transmission model per the schedule specified in R3.</p> <p>OR</p> <p>The Transmission Operator used <u>more than thirty</u> Facility Ratings that were different from those specified by a Transmission <u>or Generator</u> Owner in their Transmission model and eleven or more of those Facility Ratings were used (or should have been used) to establish a TFC for one or more flowgates.</p> <p>OR</p> <p>The Transmission operator did</p>

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R #	Lower VSL	Moderate	High VSL	Severe VSL
				<p>not include in the Transmission model detailed modeling data and topology for its own Reliability Coordinator area.</p> <p style="text-align: center;">OR</p> <p>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.</p> <p><u>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.</u></p>
R4.	N/A	N/A	N/A	<p>The Transmission Service Provider did not use assumptions consistent with those used in operations and planning studies for the same period represent the impact of Transmission Service as described in R4.</p>
R5.	<p>The Transmission Service Provider did not include <u>in the AFC process</u> one to ten expected generation or Transmission outages, additions or retirements <u>within the scope of the model as specified in the ATCID.</u>in the</p>	<p>The Transmission Service Provider did not include <u>in the AFC process</u> eleven to twenty-five expected generation and Transmission outages, additions or retirements <u>within the scope of the model as specified in the ATCID.</u>in the</p>	<p>The Transmission Service Provider did not include <u>in the AFC process</u> twenty-six to fifty expected generation and Transmission outages, additions or retirements <u>within the scope of the model as specified in the ATCID.</u>in the</p>	<p>The Transmission Service Provider did not use assumptions consistent with those used in operations and planning studies for the same period <u>the model provided by the Transmission Operator.</u></p> <p style="text-align: center;">OR</p>

R #	Lower VSL	Moderate	High VSL	Severe VSL
	AFC process.	AFC process.	AFC process.	<p>The Transmission Service Provider did not model reservations as described in R4.1.</p> <p>OR</p> <p>The Transmission Service Provider did not include <u>in the AFC process</u> more than fifty expected generation and Transmission outages, additions or retirements <u>within the scope of the model as specified in the ATCID.</u>in the AFC process.</p> <p>OR</p> <p>The Transmission Service provider did not use AFC provided by a third party.</p>
R6.	N/A	N/A	N/A	The Transmission Service Provider did not use all the elements defined in R6 when determining non-firm ETC, or used additional elements.
R7.	N/A	N/A	N/A	The Transmission Service Provider did not use all the elements defined in R7 when determining firm AFC, or used additional elements.
R8.	N/A	N/A	N/A	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm AFC, or used additional elements.

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R #	Lower VSL	Moderate	High VSL	Severe VSL
R9.	N/A	N/A	N/A	The Transmission Service Provider did not follow the procedure for determining Transfer Capabilities described in R9.
<u>R10</u>	<p><u>For Hourly, the Transmission Service provider did not calculate for more than 24 hours but not more than 48 hours.</u></p> <p>OR</p> <p><u>For Daily, the Transmission Service provider did not calculate for more than 7 calendar days but not more than 14 calendar days.</u></p> <p>OR</p> <p><u>For Monthly, the Transmission Service provider did not calculate for 31 or more calendar days, but less than 60 calendar days.</u></p>	<p><u>For Hourly, the Transmission Service provider did not calculate for more than 48 hours but not more than 72 hours.</u></p> <p>OR</p> <p><u>For Daily, the Transmission Service provider did not calculate for more than 14 calendar days but not more than 21 calendar days.</u></p> <p>OR</p> <p><u>For Monthly, the Transmission Service provider did not calculate for 60 or more calendar days, but less than 90 calendar days.</u></p>	<p><u>For Hourly, the Transmission Service provider did not calculate for more than 72 hours but not more than 96 hours.</u></p> <p>OR</p> <p><u>For Daily, the Transmission Service provider did not calculate for more than 21 calendar days but not more than 28 calendar days.</u></p> <p>OR</p> <p><u>For Monthly, the Transmission Service provider did not calculate for 90 or more calendar days, but less than 120 calendar days.</u></p>	<p><u>For Hourly, the Transmission Service provider did not calculate for more than 96 hours.</u></p> <p>OR</p> <p><u>For Daily, the Transmission Service provider did not calculate for more than 28 calendar days.</u></p> <p>OR</p> <p><u>For Monthly, the Transmission Service provider did not calculate for 120 or more calendar days.</u></p>
<u>R10R11.</u>	N/A	N/A	N/A	The Transmission Service Provider did not follow the procedure for determining Transfer Capabilities described in <u>R10R11.</u>