1.0 PURPOSE

This document serves to ensure that calculations are performed by the WAPA-RMR Transmission Service Provider to maintain awareness of available transmission system capability and future flows on the WAPA-RMR system as well as those of WAPA-RMR neighbors. Steps in this procedure are used to meet the requirements of the MOD-001-1 NERC Reliability Standard (and subsequent versions).

Available Transfer Capability (ATC) is defined in the NERC Glossary as:

A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less Existing Transmission Commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, plus counterflows.

2.0 APPLICABILITY AND RESPONSIBILITY

Operations Manager – Responsible for the ATCID for the WAPA-RMR Transmission Operator (TOP) function.

Transmission Services Manager – Responsible for the ATCID for the WAPA-RMR Transmission Service Provider (TSP) functions and Transmission Planner (TP) functions.

Transmission Business Unit Manager – is the point of contact for the ATCID for the WAPA-RMR TSP function.

NOTE: Due to the Western Area Power Administration Operations Consolidation the Western Area Power Administration – Desert Southwest Region Registered Entity (WAPA-DSW NCR#05461) is organizationally part of the Western Area Power Administration – Rocky Mountain Region (WAPA-RMR). WAPA-RMR (NCR#05464) is a separately registered entity.

3.0 APPROVERS

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<thead>
<tr>
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<tbody>
<tr>
<td>Darren Buck</td>
<td>WAPA-RMR Operations Manager</td>
</tr>
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<td>Ron Moulton</td>
<td>WAPA-RMR Transmission Services Manager</td>
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4.0 VERSION HISTORY

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5.0 ATC Methodology

The WAPA-RMR TOP has selected the “Rated System Path Methodology” as described in NERC Reliability Standard MOD-029-1 to calculate ATC. (MOD-001-1 R1)

The WAPA-RMR TSP will calculate ATC using the “Rated System Path Methodology” that has been selected by the WAPA-RMR TOP. The WAPA-RMR TSP will calculate ATC with the following granularity and periods:

- Hourly Values for at least the next 48 hours.
- Daily values for at least the next 31 calendar days.
- Monthly values for at least the next 12 months (months 2-13).

6.0 ATC Implementation

The WAPA-RMR TSP shall utilize the OATI webTrans software tool to automatically perform the ATC calculations in the granularity and period as specified in section 5.0. The OATI OASIS will provide the mechanism for posting ATC in the granularity and periods as specified above. The audit trail within the OATI webTrans and OASIS tools shall provide the evidence of meeting the specified granularity and time periods.

7.0 ATC Paths

FERC Order No. 889 outlines the three conditions for which a transmission path is required to be posted on OASIS as defined below:

- Any path between two control areas
- Any path for which transmission service has been denied, curtailed, or subject to interruption during any hour or part of an hour for a total of 24 hours in the last 12 months.
- Any path on which a transmission customer requests that ATC and TTC be posted.

The WAPA-RMR utilizes the FERC definition to determine ATC Paths subject to the determination of TTC and ATC specifically applicable to the MOD-001 and MOD-029 Standards.

Additionally, WAPA-RMR TSP utilizes the Contract Path Methodology for ATC Paths. ATC Paths are constructed by horizontally stacking transmission segments. Transmission segments are constructed from specific bus-to-bus elements of the TOP footprint.

The WAPA-RMR TP shall perform studies by stressing the generation and load to determine maximum flow or reliability limits of the individual bus-to-bus elements comprising the Transmission Segments of ATC Paths. Note:

- New ATC Paths that do not involve new bus-to-bus elements or new Transmission Segments will not require new studies.
• New ATC Paths that involve bus-to-bus elements or Transmission Segments that have not been studied to determine TTC shall require new studies

**Calculation of Total Transfer Capability (TTC)**

The Operations Manager and Transmission Services Manager shall ensure that personnel conduct calculations using computer models to compute TTC in the following manner:

Coordinate between the Operations and Transmission Planning groups to develop and run studies that satisfy the requirements listed in Attachment 1 and the following steps.

When calculating TTC, assumptions shall be no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period.

Ensure assumptions (if used) such as contingencies, loop flow, generation re-dispatch, switching operating guides or data sources for load forecast and facility outages are clearly identified and able to be retrieved for verification at a later date.

Calculate TTC as follows:

• Establish the TTC at the lesser of the value calculated below or any System Operating Limit (SOL) for that ATC Path.
• Except where otherwise specified within this procedure, adjust base case generation and Load levels within the updated power flow model to determine the TTC (maximum flow or reliability limit) that can be simulated on the ATC Path while at the same time satisfying all planning criteria contingencies as follows:
  o When modeling normal conditions, all Transmission Elements will be modeled at or below 100% of their continuous rating.
  o When modeling contingencies the system shall demonstrate transient, dynamic and voltage stability, with no Transmission Element modeled above its Emergency Rating.
  o Uncontrolled separation shall not occur.
• IF, through simulation, the power flow model determines there is a “flow limited” Transmission Segment without achieving a “reliability limit”, THEN the thermal rating, or other historical practice, of that path may be used to set TTC.
  o Note – evidence must be retained to demonstrate that the path was flow limited.
  o Note – this is permitted as indicated in the NERC Letter shown in Attachment 6, until superseded by subsequent approved guidance from NERC.
• IF it is impossible to actually simulate a reliability-limited flow in a direction counter to prevailing flows (on an alternating current Transmission line), THEN set the TTC for the non-prevailing direction equal to the TTC in the prevailing direction.
• IF the TTC in the prevailing flow direction is dependent on a Special Protection System (SPS), THEN set the TTC for the non-prevailing flow direction equal to the greater of the maximum flow that can be simulated in the non-prevailing flow direction or the
maximum TTC that can be achieved in the prevailing flow direction without use of a SPS.

- IF an ATC Path whose capacity is limited by contract, THEN set TTC on the ATC Path at the lesser of the maximum allowable contract capacity or the reliability limit as determined in the first bullet.
- IF an ATC Path whose TTC varies due to simultaneous interaction with one or more other paths, THEN develop a nomogram describing the interaction of the paths and the resulting TTC under specified conditions.
- Determine if the TTC for the ATC Path being studied has an adverse impact on the TTC value of any existing path by modeling the flow on the path being studied at its proposed new TTC level simultaneous with the flow on the existing path at its TTC level while at the same time honoring the reliability criteria outlined in the first bullet. The resolution of this adverse impact will be included in the study report for the ATC Path.
- IF multiple ownership of Transmission rights exists on an ATC Path, THEN allocate TTC of that ATC Path in accordance with the contractual agreement made by the multiple owners of that ATC Path.
- For ATC Paths whose path rating, adjusted for seasonal variance, was established, known and used in operation since January 1, 1994, and no action has been taken to have the path rated using a different method, set the TTC at that previously established amount.

**TTC Study Results**

Create a study report that describes the steps above that were undertaken, including the contingencies and assumptions used, when determining the TTC and the results of the study. IF three phase fault damping is used to determine stability limits, THEN the report shall also identify the percent used and include justification for use unless specified otherwise in this procedure.

Within 7 calendar days of the finalization of the study report, the TOP shall make available to the Transmission Service Provider of the ATC Path, the most current value for TTC and the TTC study report documenting the assumptions used and steps taken in determining the current value for TTC for that ATC Path.

**Calculation of Existing Transmission Commitments (ETC)**

WAPA-RMR shall calculations to compute ETC using the equations in Attachment 2.

**Calculations of Available Transfer Capability (ATC)**

WAPA-RMR shall ensure that personnel conduct calculations using computer models to compute ATC in the following manner:

- Data from the following entities is used in conjunction with WAPA-RMR data to calculate ATC:
- WECC data bank cases (which are comprised of data submitted by WECC members)
  - WECC Path 30 or TOT-1A
  - WECC Path 31 or TOT-2A
  - WECC Path 36 or TOT-3
  - WECC Path 39 or TOT-5
  - WECC Path 38 or TOT-4B
- The ATC calculation model shall use the equations in Attachment 3.
- When calculating ATC, assumptions shall be no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period.
  - Note: Ensure assumptions (if used) such as contingencies, loop flow, generation re-dispatch, switching operating guides or data sources for load forecast and facility outages are clearly identified and able to be retrieved for verification at a later date.
- Counterflows (counter schedules) will be assumed to be zero for calculation of Firm ATC on all ATC paths.
  - Counter schedules impact is considered only for calculation of Non-Firm ATC.
- Allocate ATC as follows:
  - IF more than one line comprises an ATC path, THEN allocate the ATC to the entire set of lines as a whole.
  - IF there are multiple owners of an ATC path, THEN allocate ATC according to contractual arrangements.
  - IF there are concerns raised regarding forward looking congestion management, seams coordination, or other issues as identified by the TSP or other TSPs, THEN the WAPA-RMR shall coordinate with the Operations Support group to determine if a change to the methodology, or process within the methodology should be included to handle those concerns within the calculation and allocation.
- Include planned generation and transmission outages, consistent with those reported in the WECC Coordinated Outage System (COS) (which includes partial day, and partial month outages) into the model that computes the ATC values.
  - IF there are outages from other TSPs that cannot be mapped to the model used to calculate ATC, THEN the WAPA-RMR shall coordinate with the Operations Support group to determine if manual adjustment is required in the model to account for the outage.
- ATC values shall be calculated for the following time increments:
  - Hourly values for at least the next 48 hours.
  - Daily values for at least the next 31 calendar days.
  - Monthly values for at least the next 12 months (months 2-13).
- ATC values shall be calculated for at the following frequencies (unless none of the values in the ATC calculation have changed):
  - Hourly values, once per hour.
  - Daily values, once per day.
  - Monthly values, once per week.
- Additional detail is available upon request.
Administration

- Providing Data to other TOPs and TSPs for ATC Calculation Purposes
  - WAPA-RMR provides data to for ATC calculation purposes to the entities identified in Attachment 5.
  - IF a TOP or TSP not listed above desires data for ATC calculation purposes, THEN contact the Transmission Business Unit Manager at the address or phone number listed below.

- Availability of ATCID
  - The Transmission Business Unit Manager shall ensure the ATCID is posted on the WAPA-RMR OASIS website.
  - IF an entity cannot access the WAPA-RMR website, THEN contact the Transmission Business Unit Manager at the address or phone number listed below to obtain a direct copy or get instructions on how to get access to the WAPA-RMR OASIS website.

- Distribution of proposed changes to the ATCID
  - The Transmission Business Unit Manager will notify the entities in Attachment 5 of proposed changes to the ATCID prior to the proposed ATCID effective date.
  - IF an entity has concerns regarding changes to or the content of the ATCID, THEN contact the Transmission Business Unit Manager at the address or phone number listed below.

- Sharing of Data Used to Determine ATC
  - Requests for the data supporting ATC calculations shall be directed to the Transmission Business Unit Manager at the address or phone number listed below.

  Phone Number:
  602-605-2662

  Mailing Address:
  Transmission Business Unit Manager
  Attn: TRM Request
  P.O. Box 6457
  Phoenix, AZ 85005-6457

  - Requests are permitted from:
    - Transmission Operators (TOPs), Transmission Service Providers (TSPs), Reliability Coordinators (RCs), or Planning Coordinators (PCs).
  - Data request for up to 13 months into the future are permitted on the items in Attachment 4.
  - The Transmission Business Unit Manager shall begin to provide the information, within 30 days of receiving the request.
  - The data shall be made available on the schedule specified by the requestor (not more frequently than once per hour, unless mutually agreed by the requestor and WAPA-RMR).
The data shall be made available by one of the two methods (or any alternative mutually agreed upon method):

- posting to a website or location from which the requestor will be able to obtain the data
- direct transfer of the data (e.g. email)

The Transmission Business Unit Manager shall ensure personnel track the cumulative hours that hourly values are not calculated but that a change in the calculated value identified in the ATC equation occurred. (Note – the MOD-001-1 standard permits up to 175 hours of no calculation before a violation limit is reached)

Document Retention

- Requests for ATC data, and communications regarding proposed ATCID changes shall be retained as evidence of compliance with the applicable NERC Standards.

Availability of TTC Study Report and TTC Values

- IF a TSP desires a copy of the TTC study and the TTC values, THEN contact the Transmission Business Unit Manager at the address or phone number listed above.
Attachment 1
TTC Model Criteria

The following describes the TTC model criteria. The model shall:

- Include at least:
  - The Transmission Operator area. Equivalent representation of radial lines and facilities 161kV or below is allowed.
  - All Transmission Operator areas contiguous with its own Transmission Operator area. (Equivalent representation is allowed.)
  - Any other Transmission Operator area linked to the Transmission Operator’s area by joint operating agreement. (Equivalent representation is allowed.)
  - Models all system Elements as in-service for the assumed initial conditions.
  - Models all generation (may be either a single generator or multiple generators) that is greater than 20 MVA at the point of interconnection in the studied area.
  - Models phase shifters in non-regulating mode, unless otherwise specified in this procedure.
  - Uses Load forecast by Balancing Authority.
  - Uses Transmission Facility additions and retirements.
  - Uses Generation Facility additions and retirements.
  - Uses Special Protection System (SPS) models where currently existing or projected for implementation within the studied time horizon.
  - Models series compensation for each line at the expected operating level unless specified otherwise in this procedure.
  - Includes any other modeling requirements or criteria specified in this procedure.
- Use Facility Ratings as provided by Transmission Owner and Generator Owners.
ETCF = NLF + NITSF + GFF + PTPF + RORF + OSF

NLF is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

NITSF is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GFF is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”

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

RORF is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer’s Transmission Service contract expires or is eligible for renewal.

OSF is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

ETCNF = NITSNF + GFNF + PTPNF + OSNF

NITSNF is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GFNF is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”

PTPNF is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OSNF is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.
ATCF = TTC – ETCF – CBM – TRM + PostbacksF + counterflowsF

ATCF is the firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETCF is the sum of existing firm commitments for the ATC Path during that period.

CBM is the Capacity Benefit Margin for the ATC Path during that period.

TRM is the Transmission Reliability Margin for the ATC Path during that period.

PostbacksF are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflowsF are adjustments to firm Available Transfer Capability as determined by the Transmission Service Provider and specified in the ATCID.

ATCNF = TTC – ETCF – ETCNF – CBMS – TRMU + PostbacksNF + counterflowsNF

ATCNF is the non-firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETCF is the sum of existing firm commitments for the ATC Path during that period.

ETCNF is the sum of existing non-firm commitments for the ATC Path during that period.

CBMS is the Capacity Benefit Margin for the ATC Path that has been scheduled during that period.

TRMU is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period.

PostbacksNF are changes to non-firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflowsNF are adjustments to non-firm Available Transfer Capability as determined by the Transmission Service Provider and specified in the ATCID.
Refer to the body of this procedure regarding the process for requesting the following information. The MOD-001-1 Standard specifies:

R9.1.1. If the Transmission Service Provider uses the data requested in its transfer or Flowgate capability calculations, it shall make the data used available.

R9.1.2. If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, but maintains that data, it shall make that data available.

R9.1.3. If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, and does not maintain that data, it shall not be required to make that data available.

- Expected generation and Transmission outages, additions, and retirements.
- Load forecasts.
- Unit commitments and order of dispatch, 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, in one of the following formats chosen by the data provider:
  - Dispatch Order
  - Participation Factors
  - Block Dispatch
- Firm and non-firm Transmission reservations.
- Aggregated capacity set-aside for Grandfathered obligations
- Firm roll-over rights.
- Any firm and non-firm adjustments applied by the Transmission Service Provider to reflect parallel path impacts.
- Power flow models and underlying assumptions.
- Contingencies, provided in one or more of the following formats:
  - A list of Elements
  - A list of Flowgates
  - A set of selection criteria that can be applied to the Transmission model used by the Transmission Operator and/or Transmission Service Provider
- Facility Ratings.
- Any other services that impact Existing Transmission Commitments (ETCs). Values of Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) for all ATC Paths.
- Values of TTC and ATC for all ATC Paths for those Transmission Service Providers receiving the request that do not consider Flowgates when selling Transmission Service.
- Source and sink identification and mapping to the model.
NERC Reliability Standard MOD-001-1 requires that the Transmission Operator make available its ATCID to certain parties listed in the standard.

The list below are the entities identified that shall receive notification (Prior to the effective date) when changes to the ATCID are proposed. (Identified in the NERC Registry 2/17/2011)

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March 4, 2011

To Transmission Owners and Transmission Service Providers subject to MOD-029-1:

On February 24, 2011, a number of registered entities with in the Western Interconnection (the “WestConnect Utilities”) submitted to NERC and to WECC a request for extension of time to comply with Reliability Standard MOD-029-001. This request follows efforts by the WestConnect Utilities to seek an extension of time from FERC, which was recently dismissed. In its dismissal order, FERC ruled that “requests for extension should be considered through NERC’s enforcement and compliance program.” In exercise of that authority, I am granting an extension of time as detailed below for all entities subject to MOD-029-1 R2.1 as that requirement is applied to “Flow Limited” paths.

Following the review of the WestConnect Utilities’ recent filing with FERC and a thorough investigation by NERC and WECC of the concerns being raised by these entities, NERC has determined there to be a valid technical concern with the MOD-029-1 Reliability Standard (Rated System Path Methodology). This concern has the potential to affect any entities that have chosen to implement MOD-029-1 to some degree; the magnitude will depend on the unique characteristics of the applicable entity’s system.

NERC understands that the current MOD-029-1 methodology may, in certain cases, lead to Total Transfer Capability (TTC) and Available Transfer Capability (ATC) values significantly lower than those previously used. MOD-029-01 Requirement 2, Sub-Requirement 2.1 requires the use of a simulation to determine the TTC:

R2.1. Except where otherwise specified within MOD-029-1, adjust base case generation and load levels within the updated power flow model to determine the TTC (maximum flow or reliability limit) that can be simulated on the ATC Path while at the same time satisfying all planning criteria contingencies as follows:

When the simulation identifies a limiting piece of equipment that restricts the amount of flow on a path, that path is considered “Reliability Limited,” and the TTC is set based on that flow. When the simulation cannot sufficiently load the transmission path such that a limit is

1 Docket No. RM08-19-00 – “Request for Extension of Compliance Date and Request for Expedited Consideration of the WestConnect Utilities” (December 30, 2010); Order Dismissing Request for Extension, 134 FERC ¶ 61,118 (February 27, 2011).

116-390 Village Blvd.
Princeton, NJ 08540
609.452.8060 | www.nerc.com
encountered, the path is referred to as being "Flow Limited." Currently, by virtue of requiring
the TTC to be established based on the simulation, MOD-029 R2.1 seems to indicate the TTC
should be established as the maximum flow simulated for those "Flow Limited" paths. Because
of the inconsistencies between contract path scheduling and actual flows on the system, however
this can result in cases where TTC is artificially constrained below what the system can actually
accommodate. Setting the TTC equal to the maximum simulated flow and then using it to
analyze contract-path schedules will not accurately account for parallel path flows and
counterflows. Consequently, paths affected by parallel path flows and/or counterflows may have
their ATC reduced to some degree. In examples provided to NERC by the WestConnect
Utilities, there have been cases where TTCs have reduced by more than 75%.

While this appears to be primarily a commercial issue, the WestConnect Utilities have indicated
that strict enforcement of the standard may cause a reliability impact on those entities that
depend on the use of the transmission system to serve load. In any event, as a general principle,
NERC works to ensure that NERC Reliability Standards do not cause undue restrictions or
adverse impacts on competitive electricity markets.

Given the short amount of time remaining until the effective date of April 1, 2011, NERC
advises all transmission owners and transmission service providers that have selected the MOD-
029-1 methodology that, while they are still expected to be compliant with the standard on April
1, 2011, NERC will be delaying the implementation of MOD-029-01 Requirement 2, Sub-
Requirement 2.1 for "Flow Limited" paths only, until such time as a modification to the standard
can be developed that will mitigate the technical concern identified. While this request for an
extension arose within the Western Interconnection, this delay in implementation for MOD-029-
01, Sub-Requirement 2.1 will be available to any transmission owner or transmission service
provider that chose the MOD-029-1 methodology, regardless of where located.

NERC is working with a group of industry technical experts to develop a SAR and suggested
modifications to the standard. It is expected that such a modification will be consistent with
current practices used today, and that the modification would be approved and filed within the
next 5-8 months. NERC will also be working with its stakeholders to analyze the
aforementioned inconsistencies between contract-path scheduling and actual flows on the system
to determine if a longer-term solution is required.

In the interim, NERC suggests (but does not require) that entities calculate the TTC of "Flow
Limited" paths consistent with practices used in the past (such as using the path thermal rating).
During audits, any paths for which TTC has not been calculated based on R2.1 will be expected
to be demonstrably "Flow Limited." Evidence to demonstrate this will be considered on a case
by cases basis, but in general, a presentation of the studies showing the results of the simulation
will be adequate proof of compliance.

NERC emphasizes that with the specific exception of the implementation of MOD-029-1 R2.1
on "Flow Limited" paths, all applicable entities are expected to proceed with their
implementation plans for the ATC-related MOD standards. If any registered entity believes that
it cannot meet the April 1, 2011 effective date for any of the other requirements in the ATC-
related MOD standards, the entity should self-report possible violations and develop and file
mitigation plans covering each requirement of the applicable MOD standards for which the
entity will not be in compliance on the effective date. NERC encourages such entity to coordinate with its regional entity so that it can be prepared in anticipation of timely self-reporting by the effective date.

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