Available Transfer Capability Implementation Document

Purpose

The purpose of this document is to describe how ATC is calculated at Salt River Project in such detail that given the same information the results of the ATC calculations can be validated. The following describes the methods, elements, and assumptions used to calculate SRP ATC.

Applicable NERC Standards and Requirements

MOD-001-1a R3
MOD-029-2a R5-R8

Registered Entity Responsibilities

Transmission Service Provider – Transmission and Generation Operations
Transmission Operator – Transmission and Generation Operations

Definitions

ALIS – All Lines in Service

E&O Committee – Engineering and Operating Committee

IOS – Initially out of Service

NSTS - Navajo Southern Transmission System

PVTS - Palo Verde Transmission System

TSN – Transmission Service Number

TSR – Transmission Service Request

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Procedure

A. Information describing how the selected methodology (MOD-29-1a) has been implemented, in such detail that, given the same information used by the Transmission Service Provider, the results of the ATC or AFC calculations can be validated.

1. SRP OASIS automatically calculates SRP Firm ATC (“$ATC_F$”) in accordance with R7 of MOD-029-2a.

$$ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + counterflows_F$$

Where each ATC$_F$ component is determined/implemented as described below:

a. TTC is calculated by using the *Rated System Path Methodology*.

b. ETC$F$ is calculated as follows:

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

Where each ETC$_F$ component is determined/implemented as described below:

i. NL$_F$

SRP sets aside transmission for resources and energy purchases to serve native load needs, via the 13 Month Transmission Plan. The 13 Month Transmission Plan utilizes the peak hour forecast to establish native load needs for each month for 13 months. The 13 Month Transmission Plan is updated at a minimum of once a month for the next 13 months. Transmission capacity that is needed for resources and energy purchases is assigned a unique TSN(s) and the associated MWs are allocated via OASIS at a minimum of once a month for the next 13 months.

ii. NITS$F$

NITS$_F$ is zero for SRP since SRP does not reserve Network Integration Transmission Service for Load. SRP only sells Network Integration Transmission Service across its Valley Network as defined in the SRP OATT. SRP does not post ATC for Network Integration Transmission Service. SRP does not sell firm point to point transmission across the Valley Network therefore Network Integration Transmission Service serving Load is not required in the calculation of ETC$_F$ or ATC$_F$.

iii. GF$_F$

SRP sets aside transmission capacity for grandfathered contracts. This is done by assigning a unique TSN(s) to each contract based on the contractual MW capacity requirements. The MWs associated with the TSN(s) are allocated via OASIS at a minimum of once a month for the next 13 months and are adjusted...
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as dictate by contractual requirements.

iv. PTP
    A customer must use OASIS to reserve firm point to point transmission. Each
    reservation is assigned a unique TSR which is automatically generated by
    OASIS once the request for a reservation is made. A customer must access
    OASIS to see all PTPF reservations. OASIS automatically includes appropriate
    PTPF(s) when it calculates ATC for a Path.

v. RORF
    SRP creates transmission reservations as placeholders to account for RORF in
    its long term ATC postings in such a way that transmission capacity eligible for
    rollover rights is never posted as ATC.

vi. OSE
    SRP uses the OS TSN type to designate certain bus hop TSNs.

   c. CBM
       SRP does not set aside transmission as CBM; therefore SRP does not use CBM in
       ATCF calculations.

   d. TRM (Transmission Reliability Margin)
       SRP does set aside transmission as TRM. TRM that is not released when
       unscheduled is designated as TRMU. TRM that is released when unscheduled
       is designated TRM. Transmission capacity that is set aside as TRM is assigned unique
       TSN(s) and the appropriate “TSN type” is TRM. The TSN MWs are allocated via
       OASIS at a minimum of once a month for the next 13 months. SRP does include all
       designated TRM in the calculation of ATCF. TRM is preserved during outages with a
       NERC curtailment priority of 8.

   e. PostbacksF
       SRP does not adjust ATCF for unscheduled reservations; therefore SRP does not
       use postbacksF in ATCF calculations.

   f. counterflowsF
       SRP doesn’t allow the use of counterflows to post additional firm capacity; therefore
       SRP does not use counterflowsF in ATCF calculations. See Section B of the ATCID
       for further explanation.

2. SRP OASIS calculates SRP Non-Firm ATC (“ATCNF”) in accordance with R8 of MOD-
   029-2a.

   \[
   \text{ATCNF} = \text{TTC} - \text{ETCF} - \text{ETCNF} - \text{CBM}_S - \text{TRMU} + \text{PostbacksNF} + \text{counterflowsNF}
   \]

   Where each ATCNF component is determined/implemented as described below:
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a. TTC
The TTC utilized for the ATC_{NF} calculation is the same TTC used in the ATC_{F} calculation. Refer to ATC_{F}, section A.1.a. of the ATCID for a description of the determination of TTC.

b. ETC_{F}
The ETC_{F} utilized for the ETC_{F} calculation is the same ETC_{F} used in the ATC_{F} calculation. Refer to ETC_{F}, section A.1.b. of the ATCID for a description of the determination of ETC_{F}.

c. ETC_{NF} is calculated as follows:

\[
ETC_{NF} = \text{NITS}_{NF} + \text{GF}_{NF} + \text{PTP}_{NF} + \text{OS}_{NF}
\]

Where each ETC_{NF} component is determined/implemented as described below:

i. NITS_{NF}
NITS_{NF} is zero for SRP since SRP does not reserve Network Integration Transmission Service for Load. SRP only sells Network Integration Transmission Service across its Valley Network as defined in the SRP OATT. SRP does not post on its OASIS ATC for Network Integration Transmission Service. SRP does not sell firm point to point transmission across the Valley Network therefore Network Integration Transmission Service serving Load is not required in the calculation of ETC_{NF} or ATC_{NF}.

ii. GF_{NF}
While SRP does have grandfathered contracts only firm transmission is set aside for these contracts therefore SRP does not use GF_{NF} in ETC_{NF} or ATC_{NF} calculations.

iii. PTP_{NF}
A customer must use OASIS when reserving non-firm point to point transmission. Each reservation is assigned a unique TSR which is automatically generated by OASIS once the request for reservation is made. A customer must look on SRP’s OASIS to see all PTP_{NF} reservations. OASIS automatically includes appropriate PTP_{NF}(s) when it calculates ATC for a Path.

iv. OS_{NF}
SRP has no other reserved transmission that falls into the OS_{NF} category.

d. CBM_{S}
SRP does not set aside transmission as CBM, therefore SRP does not use CBM_{S} in ATC_{NF} calculations.
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e. TRM\textsubscript{U} (Transmission Reliability Margin Unreleased)
SRP does set aside transmission as TRM. TRM that is not released when unscheduled is designated as TRM\textsubscript{U}. TRM that is released when unscheduled is designated TRM. Transmission capacity that is set aside as TRM is assigned unique TSN(s) and the appropriate “TSN type” is TRM. The TSN MWs are allocated via OASIS at a minimum of once a month for the next 13 months. SRP does include all designated TRM\textsubscript{U} in the calculation of ATC\textsubscript{NF}. TRM\textsubscript{U} is preserved during outages with a NERC curtailment priority of 8.

f. Postbacks\textsubscript{NF}
SRP only defines the portions of firm transmission reservations that have not been tagged as Postbacks\textsubscript{NF}. The inclusion of Postbacks\textsubscript{NF} in ATC\textsubscript{NF} is for the scheduling and operating horizons only.

g. counterflows\textsubscript{NF}
SRP doesn’t allow the use of counterflows to post additional non-firm capacity, therefore SRP does not use counterflows\textsubscript{NF} in ATC\textsubscript{NF} calculations. See Section B of the ATCID for further explanation.

B. Description of the manner in which SRP will account for counterflows including:

1. Confirmation of Transmission reservations, expected Interchange and internal counterflow are addressed in firm and non-firm ATC or Available Flowgate Capability (“AFC”) calculations.

   a. SRP does not factor counterflows and counter schedules into the calculation of ATC firm or non-firm. SRP does include counterflow e-tags in its Scheduling Availability (SA) calculation to allow net scheduling on a path or segment. In this calculation PB\textsubscript{F} refers to the amount of TRM\textsubscript{U} that may be scheduled (tagged).

   i. \( SA_{ATC} = TTC - TRM_u - \text{Confirmed e-tags} + \text{CF e-tags} - PB_F \)

C. The identity of the Transmission Operators and Transmission Service Providers from which SRP Transmission Service Provider receives data for use in calculating ATC.

1. TTC is used in the calculation of ATC\textsubscript{F} and ATC\textsubscript{NF}. SRP receives load forecast, generation dispatch, topology and schedules, for use in the calculation of TTC, from the following entities:
   a. Arizona Public Service (APS)
   b. Western Area Power Authority Desert Southwest (WAPA)
   c. Tucson Electric Power Company (TEP)
   d. Southwest Transmission Cooperative (SWTC)

D. The identity of the Transmission Service Providers and Transmission Operators to which SRP provides data for use in calculating transfer or Flowgate capability.
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1. SRP provides load forecast, generation dispatch and topology, for the use in calculation of TTC, to the following entities:
   a. Arizona Public Service (APS)
   b. Western Area Power Authority Desert Southwest (WAPA)
   c. Tucson Electric Power Company (TEP)

E. Allocation processes listed below that are applicable to SRP, as the Transmission Service Provider:

1. With the MOD-029 Rated System Path Methodology, only TTC and not ATC is allocated among sub paths and owners. Once the TTC allocation is determined for a jointly owned path each transmission owner calculates ATC independent of all other owners.
   a. SRP is the responsible entity for the calculation of the TTC for the PV-East Path. The PV-East Path is made up of several transmission systems. The allocation of PV-East Path to the individual transmission systems is done based on allocation percentages. Once the allocation has been made to the individual transmission systems then the TTC is allocated to the owners of each system based on their participation share. Any other participant paths, not included within PV-East Path definition are allocated TTC based on their participation share of the transmission project.

   b. The allocation of PVTS TTC is done by treating the three lines as a group known as a PVTS cut set. Two of the three lines run in parallel having the same POR and POD and are posted as a single path. There are two paths within the PVTS cut set that can be reserved. Each path can be reserved to the full TTC of the PVTS cut set however the sum of the reservations on the two paths cannot exceed the total TTC of the PVTS cut set. This is handled in OASIS such that when a reservation is made on any of the two paths, within the PVTS cut set, ATC on both paths is decremented.

   c. SRP has ownership in NSTS which consists of two parallel lines from Navajo switchyard to Westwing switchyard with intermediate substations on each line. SRP post the two lines as a single path similar to that as described for the PVTS cut set in E.1.b. SRP also post paths to the intermediate substations. SRP OASIS adjusts the NSTS paths ATC as a cut set according to the associated path reservations.

   d. In cases where SRP has multiple transformers within a substation with the same voltage transformation SRP will post as a single path with a single TTC and ATC.

   e. Because SRP calculates its TTC based on MOD-029 Rated System Path Methodology congestion management and seams coordination are not applicable.

F. Description of how generation and transmission outages are considered in transfer calculations.

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A generation outage is considered in cases where it is required to correct any thermal overload or voltage violation to achieve calculated TTC using the MOD-029 Rated System Path Methodology. Any thermal overload is corrected for the IOS condition and then single contingency analysis is performed. Further case adjustments are done if the IOS and the contingency resulted in a thermal or voltage violation.

Additional study work is performed to calculate TTC for planned and unplanned outages of a transmission element for any length of time which requires a new TTC be calculated. IOS studies are done using MOD-029 Rated System Path Methodology; the study is done by running a case with the element out of service. Any thermal overload is corrected for the IOS condition and then single contingency analysis is performed. Further case adjustments are done if the IOS and the contingency resulted in a thermal or voltage violation.

1. An outage which impacts transfer capability for a portion of day is processed with the start time matching the outage start time and the end time matching the outage end time. The daily ATC will be equal to the hour within the day with the least amount of ATC. This may or may not be an hour impacted by the outage.

2. An outage which impacts transfer capability for a portion of a month is processed with the start time matching the outage start time and the end time matching the outage end time. The monthly ATC will be equal to the hour within the month with the least amount of ATC. This may or may not be an hour impacted by the outage.

3. Outages from other TSP’s can all be mapped to the transmission model because the model encompasses all significant lines in the western interconnection. Therefore outages on other TSPs systems whether overlapping or not with an outage on an SRP facility is considered when evaluating transfer capabilities. Any outages SRP or non SRP that impact TTC are processed according to the start and stop time of the outage and result in an impact to ATC.

Attachments and Appendices

Related Documents

N/A

Review

The ATCID is updated whenever a change is made to the SRP ATC calculation or process.
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Version History

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