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Santee Cooper uses the Available Flowgate Capability (AFC) Methodology to assess the Available Transfer Capability (ATC) on its transmission system. Once AFCs have been determined, Santee Cooper calculates ATCs on posted paths using these AFC values through a multi-step integrated process. This document provides the formulas used for calculating the AFC and the process for determining the ATC values posted to the Santee Cooper OASIS.

FIRM AFC CALCULATION

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

Where:

AFC_F – firm Available Flowgate Capability for the AFC Path for that period

TFC – Total Flowgate Capability of the Flowgate

ETC_{Fi} – sum of existing firm Transmission commitments for the AFC Path during that period

CBM_i – Capacity Benefit Margin for the AFC Path during that period

TRM_i – Transmission Reliability Margin for the AFC Path during that period

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

$Counterflows_{Fi}$ – adjustments to firm AFC as determined by the Transmission Service Provider and specified in the ATCID

NON-FIRM AFC CALCULATION

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

Where:

AFC_{NF} – non-firm Available Flowgate Capability for the AFC Path for that period

TFC – Total Flowgate Capability of the Flowgate

ETC_{Fi} – sum of existing firm Transmission commitments for the AFC Path during that period

ETC_{NFi} – sum of existing non-firm Transmission commitments for the AFC Path during that period

CBM_{Si} – Capacity Benefit Margin for the AFC Path during that period

TRM_{Ui} – Transmission Reliability Margin for the AFC Path during that period

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

Counterflows_{NFi} – adjustments to firm AFC as determined by the Transmission Service Provider and specified in the ATCID.

AFC to ATC Conversion

To calculate AFC, the AFC Calculator uses the previously discussed AFC Firm and AFC Non-Firm algorithms. Using these calculated AFC values, the AFC Calculator evaluates new Transmission Service requests, applies business practices, and posts ATCs to OASIS.

Available Transfer Capability (ATC) is a measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. When converting AFC to ATC, the AFC Calculator uses the following equations:

$$ATCAFC = \min(P)$$

$$P = \{PATC1, PATC2, ...PATCn\}$$

$$PATC_n = \frac{AFC_n}{DF_{np}}$$

Where:

ATC_{AFC} **-** the ATC derived from the AFC process

P - the set of partial ATCs for all impacted Flowgates honored by Santee Cooper

PATC_n - the partial ATC for a path relative to a Flowgate n

AFC_n - the AFC for Flowgate n

DF_{np} - the distribution factor for Flowgate n relative to path p

Contract Path Limit

The interface between Santee Cooper's transmission system and each adjacent Transmission Operator is considered to be an import/export path pair. Each import and export path is associated with a Contract Path limit. This Contract Path limit is the sum of the ratings of the tie lines between Santee Cooper and each adjacent Transmission Operator. Santee Cooper's ATC calculation takes into consideration Contract Path limitations. This is accomplished by calculating Remaining Contract Path Capability (RCPC) for import and export paths in parallel with the AFC process. RCPC on import and export paths is calculated according to the following formula:

$$RCPC_p = \text{Contract Path Limit}_p - \sum \text{Reservations or Schedules}_p$$

Where:

$RCPC_p$ - The Remaining Contract Path Capability on import or export path p

Contract Path Limit$_p$ - The Contract Path Limit on import or export path p

Reservations or Schedules$_p$ - Reservations or Schedules (depending on the horizon) reserved or scheduled on import or export path p

RCPC for an import or export path is decremented based on the POR/POD of the reservation or schedule, and these reservations/schedules, whether firm or non-firm, are not netted. In other words, a reservation or schedule on the export path "A to B" does not impact the RCPC for the import path "B to A".

Pass-through reservations/schedules decrement two separate import/export paths – the import path from the POR and the export path to the POD. The RCPC used in the evaluation of a pass-through Transmission Service request is the lesser of the RCPC on the corresponding import and export path.

ATC on Posted Paths

When the AFC Calculator determines the ATC for Posted Paths, it uses the minimum of the remaining contract path capability or the ATC derived from the AFC calculation.

When determining $ATC_{posted\ path}$, the following equation is used:

$$ATC_{posted\ path} = min[ATC_{AFC,}\ RCPC_p]$$

Where:

$ATC_{posted\ path}$ - the Available Transfer Capability for that path that is posted on OASIS

ATC_{AFC} - the ATC for that posted path derived from the AFC process

$RCPC_p$ - Remaining Contract Path Capability for the applicable import/export path *p*