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## Tucson Electric Power Company Description of Mathematical Algorithm Used to Calculate Firm And Non-Firm ATC

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### **ATC---General Methodology and Calculations for the Three Operating Horizons**

TEP calculates firm and non-firm Available Transfer Capability (ATC) using the Contract Path ATC methodology that is based, in part, on the WECC-approved methodology detailed in “Determination of Available Transfer Capability within the Western Interconnection” and by applying the Open Access Transmission Inc. (OATI) ATC Formula parameters.

**The description of those mathematical algorithms used to calculate firm and non-firm ATC for each of the three operating horizons is described below.**

#### Acronyms Used in Equations

ATC = Available Transfer Capability

CBM = Capacity Benefit Margin

ETC = Existing Transmission Commitments

TRM = Transmission Reliability Margin

TSR = Transmission Service Reservation

TTC = Total Transfer Capability

#### **(a) Scheduling Horizon**

The Scheduling Horizon is defined as the real-time period (current hour plus the next two hours).

In the Scheduling Horizon, Firm ATC is calculated by subtracting TRM, CBM, and Reserved Firm ETC from the TTC. Non-Firm ATC is calculated by subtracting TRM, CBM, Implemented Firm Tags and Implemented Non-Firm Tags; and adding the appropriate counter-schedules which increase ATC. Subtracting the Implemented Firm



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Tags accomplishes two things: since a Firm Tag must have an accompanying Firm TSR, this properly accounts for Firm TSRs, and it will release non-Tagged Firm TSRs for use as Non-Firm.

$$(1) \text{ Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Reserved Firm ETC}$$

$$(2) \text{ Non-Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Tagged Firm/Non-Firm ETC} + \text{Counterflow Schedules}$$

### **(b) Operating Horizon**

The Operating Horizon is defined as the day-ahead or preschedule period (begins at the end of the Scheduling Horizon and extends through the end of the next preschedule day(s)).

In the Scheduling Horizon, Firm ATC is calculated by subtracting TRM, CBM, and Reserved Firm ETC from the TTC. Non-Firm ATC is calculated by subtracting TRM, CBM, Implemented Firm Tags and Implemented Non-Firm Tags. Subtracting the Implemented Firm Tags accomplishes two things: since a Firm Tag must have an accompanying Firm TSR, this properly accounts for Firm TSRs, and it will release non-Tagged Firm TSRs for use as Non-Firm.

$$(1) \text{ Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Reserved Firm ETC}$$

$$(2) \text{ Non-Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Tagged Firm/Non-Firm ETC}$$

### **(c) Planning Horizon**

The Planning Horizon is defined as the period that begins at the end of the Operating Horizon and extends through the end of the FERC required posting period.

Firm ATC is calculated by subtracting TRM, CBM, and Reserved Firm ETC from the TTC. Non-Firm ATC is then calculated by deducting from Firm ATC any reserved Short Term Non-Firm Point-to-Point Transmission Service Requests.

$$(1) \text{ Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Reserved Firm ETC}$$

$$(2) \text{ Non-Firm ATC} = \text{TTC} - \text{TRM} - \text{CBM} - \text{Reserved Firm ETC} - \text{Reserved Non-Firm ETC}$$



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**(d) Frequency of ATC Calculations**

An initialization run of the webTrans ATC calculation model is performed each day at 1100 MST for all posted paths for the hours of 1200 MST of the current day through the end of the current day.

A second initialization run is performed each day at 1600 MST for all posted paths. The second initialization extends the OASIS "Operating" time frame.

An hourly initialization run is performed at 30 minutes past the hour extending one hour or sliding out one hour at a time during real time.

Additionally, ATC is recalculated on a path-specific basis each time a new TSR is granted, an e-tag is submitted, or the TTC on a path has changed.

**These Business Practices describe general conditions and practices. There may be specific circumstances that require some variation from or are not addressed by these Business Practices. Any variations will be reported in the discretion log on OASIS, to the extent so required by FERC's regulations.**