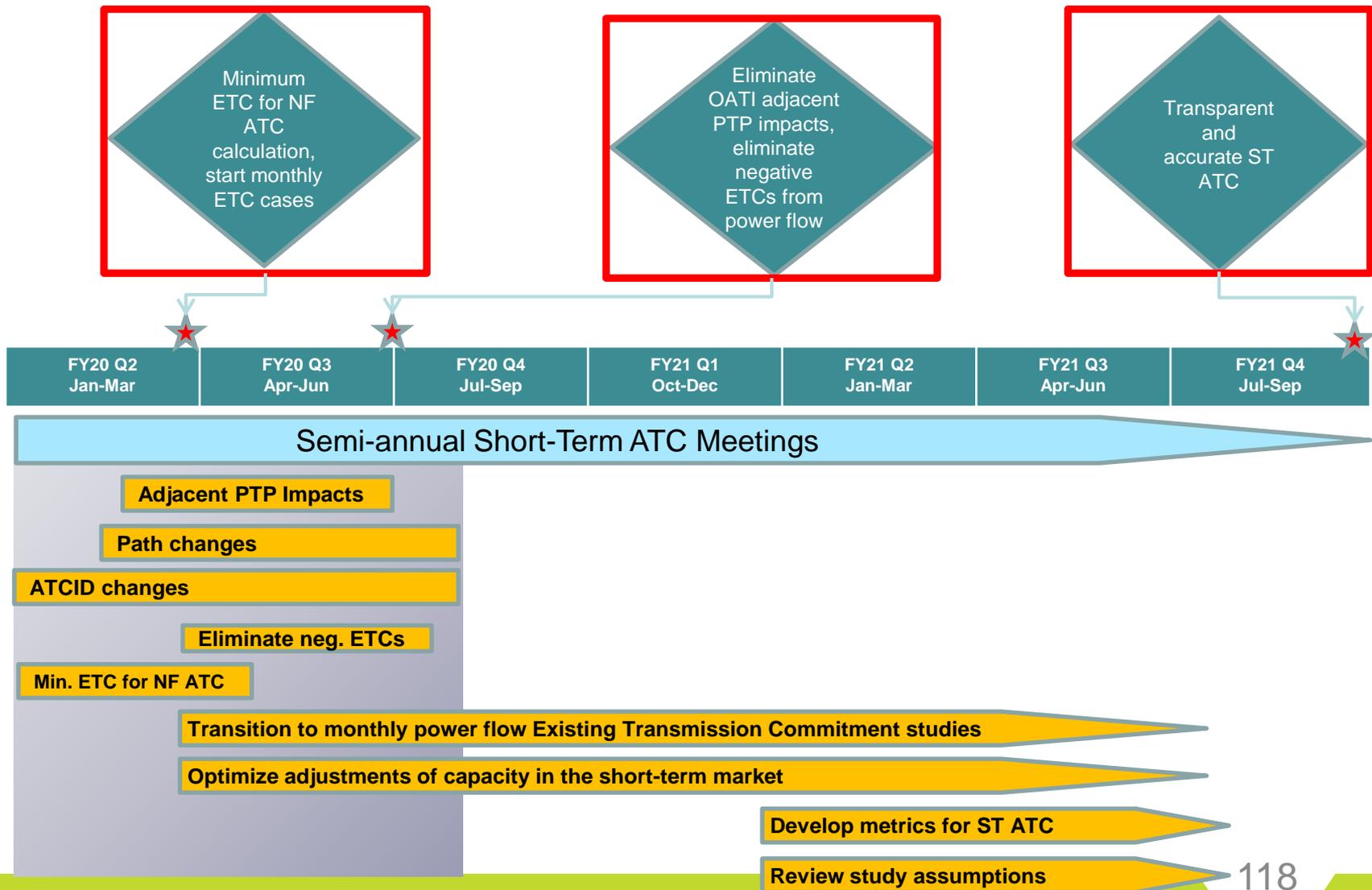# ISSUE #28: SHORT-TERM ATC IMPROVEMENTS (2.E)

- **Short-Term Available Transfer Capability (ST ATC) Project Update**

Pre-decisional. For Discussion Purposes Only.

Agenda

1. ST ATC Project Timeline

2. ATC Calculation

3. Inflight ST ATC Improvements

4. ATC Implementation Document (ATCID) Update

5. Proposed ST ATC Improvements

6. Wrap up

Pre-decisional. For Discussion Purposes Only.

Short-Term ATC Project Timeline

Minimum ETC for NF ATC calculation, start monthly ETC cases

Eliminate OATI adjacent PTP impacts, eliminate negative ETCs from power flow

Transparent and accurate ST ATC

FY20 Q2 Jan-Mar	FY20 Q3 Apr-Jun	FY20 Q4 Jul-Sep	FY21 Q1 Oct-Dec	FY21 Q2 Jan-Mar	FY21 Q3 Apr-Jun	FY21 Q4 Jul-Sep

Semi-annual Short-Term ATC Meetings

Adjacent PTP Impacts

Path changes

ATCID changes

Eliminate neg. ETCs

Min. ETC for NF ATC

Transition to monthly power flow Existing Transmission Commitment studies

Optimize adjustments of capacity in the short-term market

Develop metrics for ST ATC

Review study assumptions

118

Pre-decisional. For Discussion Purposes Only.

ATC Formulas for the NERC Time Horizon

The firm ATC formula is:

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

The non-firm ATC formula is:

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + Postbacks_{NF} + Counterflows_{NF}$$

Where:
ATC 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.
ETC 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.
TRM_U is the Transmission Reliability Margin that has not been released for sale as non-firm capacity
Postbacks 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.
Counterflows are adjustments to firm Available Transfer Capability as determined by the Transmission Service Provider and specified in their ATCID.
F subscript refers to Firm; **NF subscript** refers to Non-Firm; **S subscript** refers to Scheduled

Inflight ST ATC Improvements

1. BPA has two in-flight ST ATC improvements, which were originally presented at BPA's January 30, 2020 webinar on ST ATC

   a. Transition to monthly Existing Transmission Commitment (ETC) power flow studies

   b. Use of the minimum ETC from the power flow base cases to calculate non-firm ATC across flow-based paths for 0 to 13 month NERC horizon

2. BPA will be implementing these improvements on March 24, 2020

Pre-decisional. For Discussion Purposes Only.

Inflight ST ATC Improvement #1

Description: Transition to monthly ETC power flow studies

1. BPA will transition to monthly ETC studies Spring 2020

    a. Current ETC power flow studies are seasonal, with three studies performed per year (Spring, Summer and Winter)

    b. The seasonal ETC values are used to establish the base ETC values used in the ST ATC calculation for all 12 months of the year

2. Benefits of monthly ETC power flow studies

    a. Monthly studies will enable BPA to use monthly load and generation forecasts for our Balancing Authority, as opposed to seasonal peak forecasts

    b. Monthly studies will enable BPA to update system topology and generation energizations in a more timely manner

Pre-decisional. For Discussion Purposes Only.

Inflight ST ATC Improvement #1 (cont.)

3. Schedule for transition to monthly ETC studies:

   a. WECC Spring 2020 case will be used for April and May ETC studies

      i. These studies will be reflected in the April and May ATC values posted in OASIS on March 24, 2020

   b. WECC Summer 2020 case will be used for June, July, August, September and October ETC studies

      i. These studies will be reflected in the June, July, August, September and October ATC values posted in OASIS in late May 2020

   c. WECC Winter 2021 case will be used for November, December, January, February and March ETC studies

      i. These studies will be reflected in the November, December, January, February and March ATC values posted in OASIS in late October 2020

Inflight ST ATC Improvement #2

Description: Use minimum ETC from the power flow base cases to calculate non-firm ATC across flow-based paths for 0 to 13 month NERC horizon

1. ETC is the sum of existing commitments across each path

2. Currently, BPA uses the maximum ETC result from the power flow base cases to calculate firm and non-firm ATC for the NERC horizon

3. BPA releases the difference between the maximum and minimum ETC results from the power flow to non-firm ATC in the 0 to 4 month time frame

    a. This is described as a commercial uncertainty margin in BPA's ATCID

    b. This process results in BPA using the minimum ETC for its non-firm ATC for the 0 to 4 month horizon

123

Inflight ST ATC Improvement #2 (cont.)

4. Current Process

	0 to 4 months	4 to 13 months
Firm ATC	Maximum ETC	Maximum ETC
Non-Firm ATC *	Minimum ETC	Maximum ETC

5. Proposed Process – change is highlighted in Yellow

	0 to 4 months	4 to 13 months
Firm ATC	Maximum ETC	Maximum ETC
Non-firm ATC *	Minimum ETC	Minimum ETC

* For non-firm ATC, minimum ETC will be used in the Beyond Real-Time Horizon to 13 months. In the Real-Time Horizon that begins at 22:00 the day prior to the delivery day, BPA sums firm schedules, non-firm schedules and unscheduled non-firm reservations to calculate non-firm ETC.

124

Inflight ST ATC Improvement #2 (cont.)

6. Staff analyzed this process and concluded that BPA can use the minimum ETC in its non-firm ATC calculation for the entire 0 to 13 month NERC horizon, without impacting reliability

7. Customer Impacts

   a. Upon this change, customers will see that non-firm ATC will be greater than before in the 4 to 13 month timeframe

   b. Customers will no longer see a release of additional non-firm ATC around the four month time frame, as the additional capacity will already have been made available

ATCID Update

1. An updated ATCID capturing ST ATC Improvements #1 and #2 will be posted prior to March 24, 2020

    a. The update will cover BPA's transition to monthly ETC cases and the use of the minimum Existing Transmission Commitment value to calculate non-firm ATC for 0-13 month time frame

2. Details of changes will be available in the Version History of the ATCID

Pre-decisional. For Discussion Purposes Only.

Proposed ST ATC Improvements

1. BPA would like to discuss the following proposed future changes on ST ATC

   a. Using zero as base ETC when power flow studies result in negative base ETCs (indicating that power is expected to flow counter to the constraint)

   b. Elimination of the impacts of adjacent Transmission Service Provider (TSP) impacts calculated by OATI from BPA's ETC calculation

   c. Potential pilot program to manage hourly non-firm ATC across BPA's flow-based paths when congestion is anticipated

Proposed ST ATC Improvement #1

Description: If power flow studies result in negative base ETCs (indicating that power is expected to flow counter to the constraint), treat the base ETC as zero

1. BPA presented this proposed improvement at the January 30th, 2020 webinar

2. Customers have submitted comments regarding this proposal

    a. The comments have been posted at:
    https://www.bpa.gov/transmission/CustomerInvolvement/TC20Implementation/Documents/02.14.20-Comments-and-Questions-regarding-Short-Term-ATC-PGE-PSE-SCL-SNPD.pdf

3. Customers requested that BPA delay the implementation of this change and clarify the impacts of the change to ETC, ATC and the counterflow calculation

    a. BPA is including this information on the following slides and is delaying the implementation to allow for more discussion and understanding of the proposal

Proposed ST ATC Improvement #1 (cont.)

4. BPA has instances where <u>power flow studies</u> have resulted in negative base ETC values across BPA's flow-based paths

5. Negative base ETC values indicate that, if all commitments modeled in the base case are scheduled, BPA will see negative flows on that path

   a. Negative ETC values result from counterflows within the power flow study, as these studies inherently include counterflows

   b. Using a negative base ETC value in the ATC calculation results in ATC values that are higher than the TTC of a path

   c. Since not all commitments in the ETC base case will be scheduled, counterflows may not materialize as assumed by the power flow and should not be used to create excess capacity

   d. This change is consistent with the long-term ETC process

Proposed ST ATC Improvement #1 (cont.)

6. At the last upload of base ETC data in late October 2019, BPA had negative maximum ETC values for the following paths/seasons:

PATH	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
SOUTH OF ALLSTON S>N (TTC = 1320 MW)	-509	-509	-509	-509	-509	-509	-509	-509	-509	-509	-509	-509
NORTH OF HANFORD N>S (TTC = 5100 MW)	-589	-589	1060	2708	2708	2708	2747	2747	1913	1079	-589	-589
SOUTH OF CUSTER N>S (TTC = 1357 MW - 1478 MW)	-1931	-1931	-582	768	768	768	609	609	-26	-661	-1931	-1931

7. The above ETCs resulted in the following ATC values:

PATH	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
SOUTH OF ALLSTON S>N (TTC = 1320 MW)	1664	1063	1073	1072	1072	1155	1129	1153	1170	1238	1152	1269
NORTH OF HANFORD N>S (TTC = 5100 MW)	5516	5497	3670	2006	1997	2111	2088	2092	2926	3830	5495	5567
SOUTH OF CUSTER N>S (TTC = 1357 MW - 1478 MW)	3253	3253	1886	552	551	703	863	864	1498	2136	3285	3285

a. The ATC values highlighted in orange are higher than the TTCs of these paths

Proposed ST ATC Improvement #1 (cont.)

8. If zeros had been used as the base ETC in late October 2019, BPA would have used the following base ETC values in its system update:

PATH	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
SOUTH OF ALLSTON S>N (TTC = 1320 MW)	0	0	0	0	0	0	0	0	0	0	0	0
NORTH OF HANFORD N>S (TTC = 5100 MW)	0	0	1354	2708	2708	2708	2747	2747	2060	1374	0	0
SOUTH OF CUSTER N>S (TTC = 1357 MW - 1478 MW)	0	0	384	768	768	768	609	609	457	305	0	0

9. The above ETCs would have resulted in the following ATC values:

PATH	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
SOUTH OF ALLSTON S>N (TTC = 1320 MW)	1155	554	564	563	563	646	620	644	661	729	643	760
NORTH OF HANFORD N>S (TTC = 5100 MW)	4927	4908	3376	2006	1997	2111	2088	2092	2779	3536	4906	4978
SOUTH OF CUSTER N>S (TTC = 1357 MW - 1478 MW)	1322	1322	920	552	551	703	863	864	1015	1171	1354	1354

a. Note that none of the ATC values would have been higher than the TTC of these paths

131

March 17, 2020   Pre-decisional. For Discussion Purposes Only.

Proposed ST ATC Improvement #1 (cont.)

10. BPA is not proposing any other changes to the counterflow methodology

    a. BPA's Firm ETC = base ETC from power flow + interim ETC from PTDFs

    b. The negative ETC in the proposed change is the base ETC from the power flow

        i. BPA will use a zero for base ETC from the power flow, rather than a negative value

        ii. In these instances, BPA's Firm ETC = 0 + interim ETC from PTDFs

    c. The counterflow in the equation above is captured in the <u>non-firm</u> equation as we switch to using schedules rather than reservations in the real-time horizon

        i. There will be no changes to this process

11. BPA has postponed this change from March 2020 to May 2020 to allow additional time for customers to understand the impacts of this change

    a. Change will be implemented as the June through October ETC numbers are released in late May 2020

132

Proposed ST ATC Improvement #2

Description: Eliminate the impacts of adjacent Transmission Service Provider (TSP) impacts calculated by OATI from BPA's ETC calculation

1. When BPA implemented NERC MOD-030 to calculate ATC for its flow-based paths, BPA implemented functionality in OATI to calculate the impacts of adjacent TSPs in BPA's ETC calculation

    a. MOD-030 specifically requires TSPs to include adjacent TSP impacts in their ETC calculations

    b. MOD-029, which BPA presently uses for all its paths, does not have this requirement

March 17, 2020   Pre-decisional. For Discussion Purposes Only.

Proposed ST ATC Improvement #2 (cont.)

2. BPA reviewed this functionality, and plans for it to be retired

3. BPA accounts for adjacent TSP impacts in several ways:

   a. BPA uses the load forecasts of adjacent TSPs in the WECC seasonal cases when doing the power flow studies that establish BPA's base ETC values

   b. BPA uses the generation assumptions of adjacent TSPs in the WECC seasonal cases as well, unless the generators are in BPA's Balancing Authority or directly interconnected to BPA (then the firm rights of the generators are modeled)

   c. BPA allocates TTC for shared paths among owners and only uses BPA's share of the TTC to calculate BPA's ATC

4. BPA believes that the additional OATI functionality results in double counting of adjacent TSP impacts

134

Proposed ST ATC Improvement #2 (cont.)

5. Customers could see additional capacity on the flow-based paths when this functionality is turned off

6. Removing adjacent TSP impacts streamlines the calculation, making ST ATC calculations more transparent

7. BPA would like to implement this change with its system update at the end of May 2020

Proposed ST ATC Improvement #3

Description: BPA is looking at ways to better manage hourly non-firm ATC across BPA's flow-based paths when congestion is anticipated

1. BPA typically sells unlimited hourly non-firm ATC across these paths

2. BPA uses curtailments to bring flows on a path within reliability limits if congestion is occurring

3. Additionally, BPA may implement non-firm TLR Avoidance across a specific path to manage congestion

   a. TLR Avoidance reduces ATC to zero across the <u>specific path</u>

Proposed ST ATC Improvement #3 (cont.)

4. BPA is considering a pilot program to limit hourly non-firm sales to the posted hourly non-firm ATC in OASIS (like the AFC Validation in place for hourly Firm)

    a. The validation would be used as an alternative to TLR Avoidance when BPA anticipates congestion

    b. The validation would impact <u>all flow-based paths</u> (unlike TLR Avoidance), as the current software does not support limiting validation to specific paths

Proposed ST ATC Improvement #3 (cont.)

5. Visual of the proposed change:

Path	Hourly NF AFC, Normal State	Hourly NF AFC, TLR Avoidance	Hourly NF AFC, Pilot Program
North of Echo Lake	Unlimited	0	100
West of Slatt	Unlimited	Unlimited	0
Cross Cascades North	Unlimited	Unlimited	100
North of John Day	Unlimited	Unlimited	100

a. Hourly NF AFC, Normal State: BPA sells unlimited hourly non-firm AFC in the normal state

b. Hourly NF AFC, TLR Avoidance: If TLR Avoidance is needed, BPA reduces the firm/non-firm AFC across a specific path to zero; hourly non-firm AFC across all other paths remains unlimited

c. Hourly NF AFC Pilot Program: Under this pilot, BPA would not trigger TLR Avoidance, but would instead turn on hourly non-firm AFC Validation **for all paths** to limit new hourly non-firm requests to the calculated/posted hourly non-firm AFC. If the calculated/posted hourly non-firm AFC was zero across a path, BPA would deny requests needing additional hourly non-firm AFC across that path.

6. BPA would like feedback on whether customers are interested in having BPA explore this type of pilot program

Wrap up

1. BPA will continue to work on the proposed ST ATC changes and will let customers know when additional details and exact implementation dates are available

   a. BPA's ATCID will be updated prior to implementation of any changes

2. Please submit comments by March 31, 2020 to the techforum@bpa.gov

3. Please include your AE to your comments submitted with the specific or topic

Pre-decisional. For Discussion Purposes Only.