

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

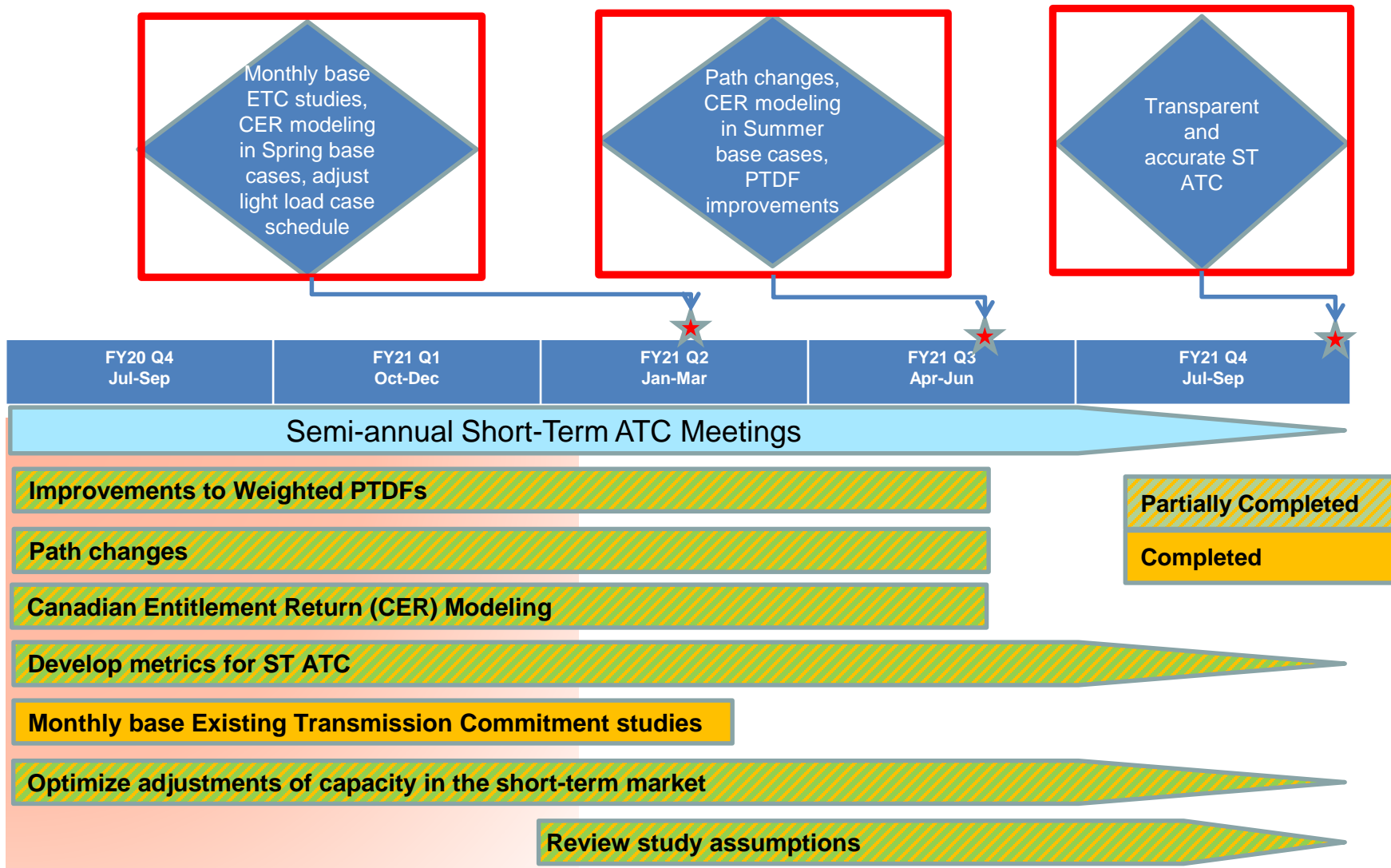
March 17, 2021



Agenda

1. ST ATC Project Timeline
2. Completed ST ATC Improvements
3. In-flight ST ATC Improvements
4. Wrap up
5. Appendix – ATC Formulas (NERC Time Horizon)

Short-Term ATC Project Timeline



Completed ST ATC Improvements



Completed ST ATC Improvement #1

Description: Transitioned March heavy load base Existing Transmission Commitments (ETC) from an average of January and May to a monthly March study

1. Monthly studies enable BPA to use monthly load and generation forecasts for our Balancing Authority (versus seasonal peaks)
2. Monthly studies also allow for more timely updates to system topology and generation energizations
3. BPA has now transitioned from seasonal to monthly heavy load base ETC studies for all months in the NERC horizon (0 to 13 months)

Completed ST ATC Improvement #1 (cont.)

4. The table below summarizes this transition:

POSTED TO OASIS	HEAVY ETC BASE CASE STUDIES PERFORMED											
Prior to Mar-20	SPRING		SUMMER					WINTER				
Mar-20	APR	MAY	SUMMER					WINTER				
May-20	APR	MAY	JUN	JUL	AUG	SEP	OCT	WINTER				
Oct-20	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	50-50 May/Jan
Feb-21	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR

5. Change for March heavy load base ETC was implemented on February 17, 2021

Completed ST ATC Improvement #2

Description: Modified the light load ETC base case schedule

1. In 2020, BPA used WECC's Spring light load case to calculate the base ETC for April and May for the West of Hatwai path
2. WECC had not issued a Spring 2021 light load case, so BPA needed to determine the best path forward on setting the base ETC for April and May across West of Hatwai
3. At the December 16, 2020 customer meeting, BPA stated that we would run the Summer 2021 light load base ETC case and use the highest ETC from either the Winter or Summer light load base ETC cases to set the Spring base ETC for West of Hatwai

Completed ST ATC Improvement #2 (cont.)

4. Upon completing the Summer light load case, BPA found that the ETC values from the Summer and Winter light load cases were very similar for West of Hatwai (within 10 mw)
5. Since the Summer light load case did show slightly higher flows for West of Hatwai, BPA used the Summer light load values to set the base ETC for the April and May months across this path
6. BPA will continue to evaluate what makes sense for the light load ETC cases going forward
7. Change was implemented on February 17, 2021

Completed ST ATC Improvement #3

Description: Clarified Postback Methodology language within BPA's ATC Implementation Document (ATCID)

1. The North American Energy Standards Board (NAESB) Wholesale Electric Quadrant business practice standards require Transmission Providers to maintain a Postback Methodology
2. BPA documents its Postback Methodology within its ATCID
3. BPA has clarified its Postback Methodology language in its ATCID to more clearly align with the requirements of the NAESB business practice standards
 - a. There are no changes to BPA's ATC Methodology or Postback Methodology – this is a documentation clarification only
 - b. Clarifications were incorporated into the ATCID versions posted in February 2021

In-flight ST ATC Improvements

(previously discussed in earlier meetings)



In-flight ST ATC Improvement #1

Description: Implementation of permanent modeling solution for the Canadian Entitlement Return (CER) in Spring and Summer ETC cases

1. BPA has discontinued the CER PTDF adjustments for March, April and May
 - a. The adjustments are no longer needed as BPA had added an additional power flow study scenario that models the CER being returned to Canada for the Spring months
 - b. Changes for the months of March, April and May were implemented on February 17, 2021
2. This improvement is partially completed, as these scenarios still need to be incorporated into the June through October base ETC studies for release to OASIS in May 2021

In-flight ST ATC Improvement #2

Description: Retirement of North of John Day ATC Path

1. BPA is moving forward with the retirement of the North of John Day ATC Path in both the long-term and short-term markets
2. BPA is following the process to delist this path in the WECC Path Rating Catalog
 - a. WECC issued a notice of this path's proposed delisting and no comments were received on this
 - b. BPA is coordinating the retirement of the North of John Day path in both the short-term and long-term markets with the delisting process
 - c. Until the path is retired, all current processes remain unchanged
3. Implementation date is projected to occur in May 2021

In-flight ST ATC Improvement #3

Description: Development of ST ATC metrics

1. BPA is continuing work on ST ATC metrics
2. Team is identifying the data needed to answer the questions presented to customers at the September 23rd meeting
3. Team is also working on identifying where the needed data is currently located
4. The base ETC data structure has been established and the team is hoping that this data can begin to migrate into a central database in the coming months
5. The team is starting to look at the Total Transfer Capability data already in the database and beginning to discuss how to perform the evaluations of that data

In-flight ST ATC Improvement #4

Description: Further improve the inputs for the calculation of the weighted Power Transfer Distribution Factor (PTDF) for the BPA Power Point of Receipt (POR)

1. BPA is working to further improve the accuracy of its weighted PTDF for the BPA Power POR
2. Currently, BPA calculates this weighted PTDF for all of BPA's flow-based paths by using the generation profile from a single monthly base ETC scenario
3. BPA would like to calculate this weighted PTDFs by using the generation profile from the monthly base ETC scenario that stresses each individual flow-based path

In-flight ST ATC Improvement #4 (cont.)

4. Weighted PTDF will better represent the stress scenario that ETC is being calculated for and therefore improve the accuracy of ST ATC
5. Anticipated implementation date: May 2021

In-flight ST ATC Improvement #5

Description: Update generation data for the Willamette Valley projects

1. Willamette Valley projects include Big Cliff, Cougar, Detroit, Dexter, Foster, Green Peter, Hills Creek, Lookout Point, and Lost Creek
2. Currently, BPA uses seasonal values for the Willamette Valley projects from the low water year of 2001
 - a. This assumption stresses BPA's flow-based paths, as more generation from other federal hydro projects is assumed to flow across the flow-based paths to serve loads in the Willamette Valley area
3. Since BPA has transitioned to monthly heavy load ETC cases, BPA would like to use monthly generation values for the Willamette Valley projects that are established/updated using a repeatable, standard process

In-flight ST ATC Improvement #5 (cont.)

4. BPA would like to transition to a monthly fleet-aggregate lower 10th percentile (P10) of Heavy Load Hour block generation from the planning period of record
 - a. BPA will adjust the forecast as needed to more accurately reflect operations that BPA knows are in place 2021 and beyond
 - b. This method reflects a statistical probability for each month, instead of a particular year's annual generation pattern as currently used
 - c. P10 is a frequently used metric for reliability purposes
 - d. This method should be robust to updates for the period of record, and to any evolution to the current forecasting paradigm of these projects
5. Values will be updated with each heavy load base ETC study cycle

In-flight ST ATC Improvement #5 (cont.)

6. BPA views this as a needed accuracy improvement, as we currently have a static, seasonal generation assumption and need to move to a repeatable, monthly forecast method
7. Implementation date for the NERC horizon (0 – 13 months):
Summer 2021 ETC cases, which will be implemented to OASIS in mid-May 2021
 - a. Overall, it will take BPA to mid-February 2022 to fully transition its ETC base cases for the NERC horizon to this new process
8. Implementation date for the Planning Time Period (beyond 13 months): change in modeling will be incorporated into the Long-Term ATC Methodology prior to the next Long-Term ATC Base Case update
 - a. A “Category A” redline of the Long-term ATC Methodology will be posted for comment this Spring/Summer

Wrap up

1. BPA will continue to work on the in-flight and proposed ST ATC changes and will update its ATCID prior to implementation of any changes
 - a. BPA will communicate additional information and/or implementation dates via Tech Forum
2. Comments are due by March 31, 2021
3. Please send Questions/Comments to techforum@bpa.gov, with a copy to your Account Executive

Appendix – ATC Formulas (NERC Time Horizon)

The firm ATC formula is:

$$\mathbf{ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + Counterflows_F}$$

The non-firm ATC formula is:

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

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