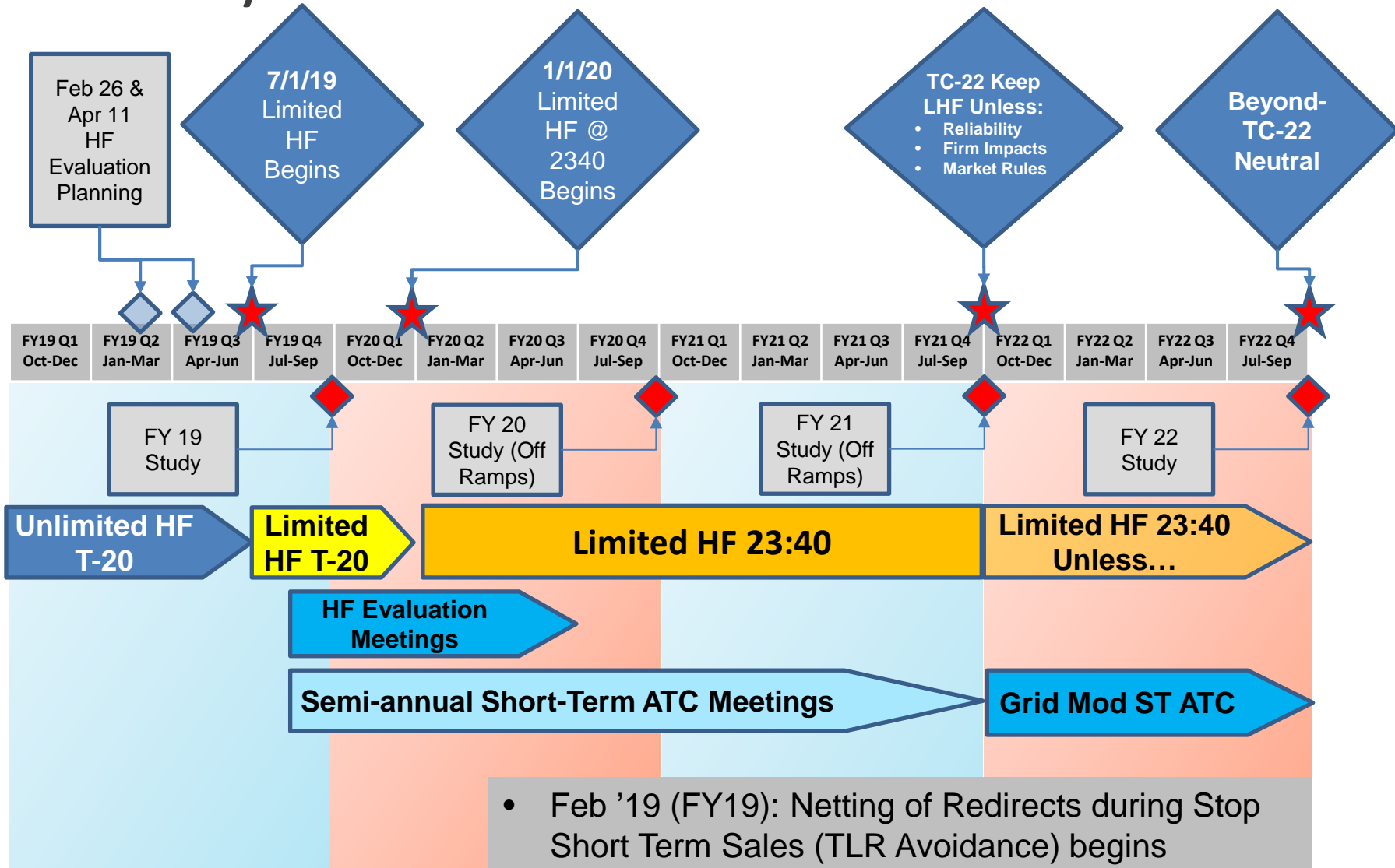


TC-20 Settlement Customer Workshop

September 26, 2019

Hourly Firm & Short-Term ATC Timeline

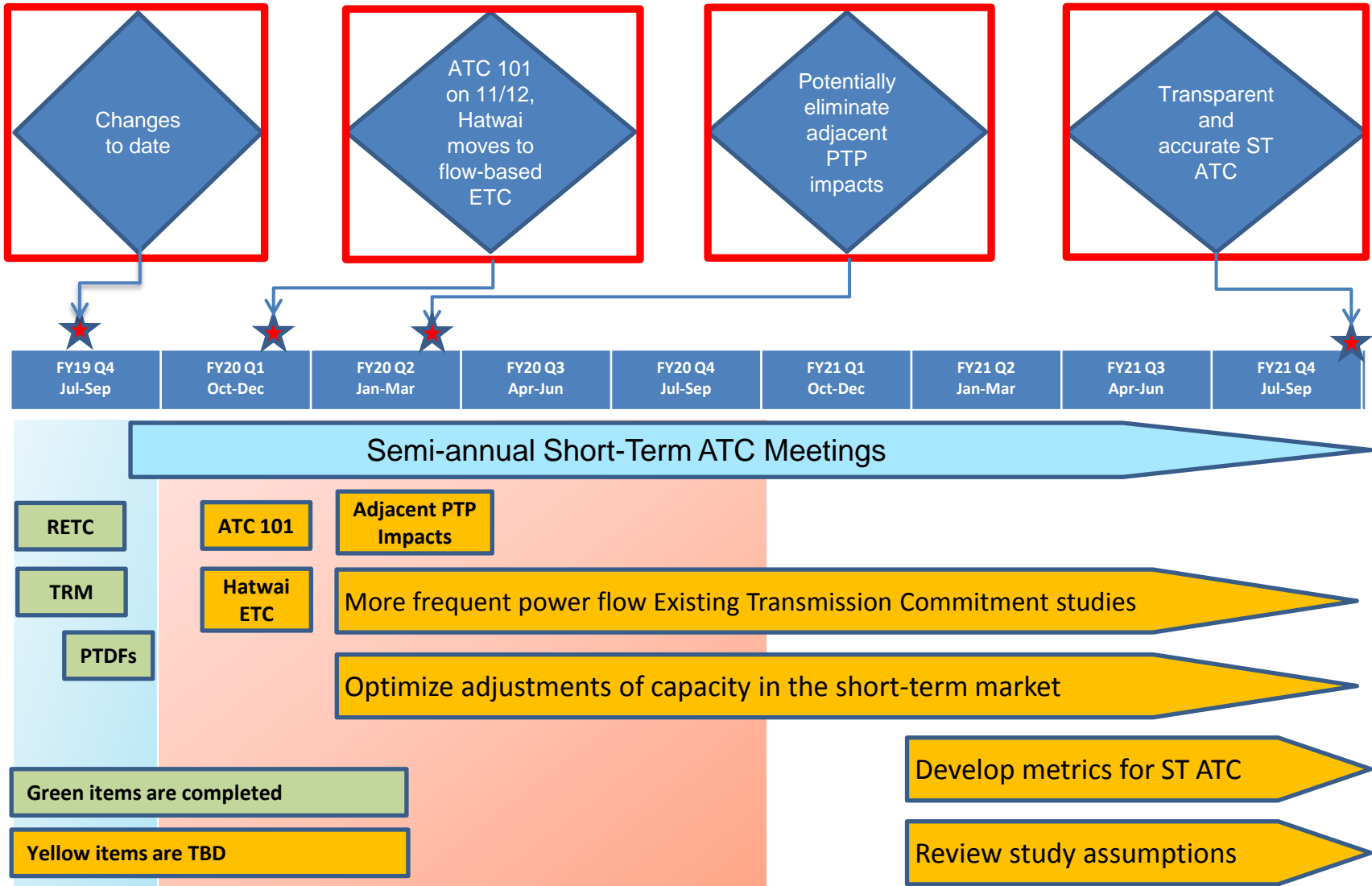


Short-Term Available Transfer Capability (ST ATC) Project Update

Agenda

1. Short-Term ATC Project Timeline
2. ATC Calculation
3. Completed Improvements
4. In-flight Improvement
 - a. West of Hatwai Base Case
5. More Involved ST ATC Work
6. What are the Next Steps?

Short-Term ATC Project Timeline



ATC Calculation

The ATC Calculation (from MOD-029-2a) is:

When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm:

$$\text{ATC} = \text{TTC} - \text{ETC} - \text{CBM} - \text{TRM} + \text{Postbacks} + \text{Counterflows}$$

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.

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.

Completed Improvements

1. At the June 13th customer meeting, BPA proposed four improvements to short-term ATC
 - a. Three of these improvements have been completed
2. Summary of completed improvements:
 - a. Eliminated the impacts of unscheduled Network Integration Transmission Service of BPA's adjacent Transmission Service Provider areas from BPA's ST ATC on the network paths (August 14th)
 1. This was known as the RETC variable in OATI system
 - b. Implemented an updated Total Transfer Capability and firm Transmission Reliability Margin for West of Garrison E>W (August 14th)
 - c. Implemented more frequent updates to Power Transfer Distribution Factors (PTDFs) (September 2019)
 1. PTDF updates will occur once per hour, assuming that no adverse impacts to system performance are observed

In-Flight Improvement

1. The following improvement discussed at the June 13th customer meeting is still in-flight:
 - a. Implementing a flow-based analysis to calculate Existing Transmission Commitments (ETC) across West of Hatwai
 - b. BPA anticipates that this improvement will be delivered in mid-November, 2019

West of Hatwai Base Case

1. WECC Winter 2020 light load case will be used for the West Of Hatwai ETC studies
 - a. Initially, the winter case will be used for the entire short-term horizon
 - b. BPA will perform a Spring 2020 study as well, and update the ETC values for the spring season with these results
 - c. BPA will evaluate if a Summer 2020 study is needed
2. Canadian Entitlement will be modeled as delivering energy to Canada in the amount specified in the Canadian Entitlement Agreement
3. Wind generation will be modeled as in the WECC base case
4. Cases will be balanced using merit-order sequence of tiered generation groups that are assumed to be re-dispatched based on fuel cost

West of Hatwai Base Case (cont.)

5. Three sensitivity studies will be performed
 - a. Federal generation east of the path (Libby, Hungry Horse, Dworshak and Albeni Falls) at its seasonally modeled levels
 - b. Increase of federal generation east of the path and a corresponding reduction of federal generation west of the path (big 10 hydro projects)
 - c. Reduction of federal generation east of the path and corresponding increase on federal generation west of the path
 - d. These sensitivity studies are proposed because the sensitivity studies applied to the peak seasonal cases primarily stress generators west of the path that have little relationship to flows on West of Hatwai.

More Involved ST ATC Work

1. BPA's ST ATC Subject Matter Experts (SMEs) have identified a suite of more involved work needed to deliver more accurate and transparent ST ATC
2. This work consists of the following:
 - a. Remove the impacts of Point-to-Point and Grandfathered Transmission Service expected to be scheduled for all of BPA's adjacent Transmission Service Provider areas from BPA's ETC
 - b. Move to more frequent power flow ETC studies
 - c. Optimize adjustments of capacity in the short-term market
 - d. Develop metrics for ST ATC
 - e. Review the assumptions in the power flow ETC studies

More Involved ST ATC Work (cont.)

Improvement #1: Investigate the possibility of removing impacts of Point-to-Point and Grandfathered Transmission Service expected to be scheduled for all of BPA's adjacent Transmission Service Provider areas from BPA's ETC

1. Currently, these impacts are included in BPA's firm and non-firm ETC, and therefore factor into ATC, for the network paths
 - a. Process is a holdover from when BPA was using NERC's MOD-030 methodology for its network paths
 - b. BPA believes that this data element could be removed from BPA's ST ATC for network paths as it is not related to commitments that BPA has made across its system
2. BPA would like to investigate the magnitude of the ST ATC impacts if this process is discontinued
3. BPA expects to complete the research and have a recommendation on the path forward by end of March 2020

More Involved ST ATC Work (cont.)

Improvement #2: Move to more frequent power flow ETC studies

1. Currently, BPA conducts three power flow ETC studies per year
 - a. Studies are based on a seasonal case, with seasonal non-coincidental load forecasts
2. Moving to more frequent power flow ETC studies (i.e. one per month) will allow for study inputs to more closely represent the time period being studied, and will thus result in a more accurate ETC and ATC
3. Work effort will consist of automating the manual steps of the base case process
4. BPA expects that this improvement will be a long-term effort that will parallel the other efforts

More Involved ST ATC Work (cont.)

Improvement #3: Optimize adjustments of capacity in the short-term market

1. BPA makes a variety of adjustments in the short-term market
2. Adjustments that will be reviewed and possibly modified:
 - a. Encumbrances for the long-term pending queue
 - b. Encumbrances for deferrals
 - c. ATC adjustments on BPA's 1:1 paths
3. BPA expects that the review of all the adjustments will be a more involved effort
 - a. However, BPA expects to examine the adjustments one at a time so that we can deliver incremental value

More Involved ST ATC Work (cont.)

Improvement #4: Develop metrics for ST ATC

1. BPA is intending to build on the groundwork being established in the hourly firm evaluation and long-term ATC efforts for further metrics development for ST ATC
2. Work on this will begin later in the ST ATC project lifecycle

More Involved ST ATC Work (cont.)

Improvement #5: Review the assumptions in the power flow ETC studies

1. The power flow ETC base cases are built and solved using a set of assumptions
 - a. Staff believe that the assumptions are conservative, and compound in the various elements of the ATC formula
2. Assumptions that can be evaluated are load forecasts, generation modeling and how the case is balanced out
 - a. The goal is a risk-informed ST ATC
3. Work on this will begin later in the ST ATC project lifecycle, once some automation of base case studies is available
 - a. Automation will allow for scenarios to be studied more efficiently

What are the Next Steps?

1. BPA is continuing to work on the in-flight item and will let customers know when the exact implementation date is available
 - a. ATCID will be updated prior to implementing changes
2. November 12th, 2019 ATC 101 Workshop
 - a. BPA will go over the ATC calculation process for the network paths
3. Comments on the ST ATC proposed improvements discussed today are due in 20 business days – comments will close October 25, 2019
4. Please send Questions/Comments to techforum@bpa.gov
 - a. BPA is interested in any other suggestions customers have for improving ST ATC, in addition to comments on the suggested improvements