ATC Calculation Proposed Changes & Alternatives

Transmission Load Service Workshop

January 19, 2016

Agenda

- Share results of previous comment period
- Share data requested during last workshop
- Continue discussion of proposed changes to the Long-Term ATC Methodology and BPA staff leanings on implementation alternatives
- Open new comment period to solicit your feedback

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Glossary

- ALIS = All Lines in Service
- AMM = ATC Methodology Margin
- ATC = Available Transfer Capability
- DNR = Designated Network Resource
- ETC = Existing Transmission Commitments
- FCRPS = Federal Columbia River Power System
- GF = Grandfathered, pre-Open Access Transmission Tariff, service
- LT = Long-Term (transmission service with term of >1 year)
- NCP = Non-Coincidental Peak
- NT = Network Integration Transmission Service
- POD = Point of Delivery
- POR = Point of Receipt
- PTDF = Power Transfer Distribution Factor
- PTP = Point-to-Point Transmission Service
- TTC = Total Transfer Capability

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Current State LT Calculations

- Current "hybrid" method in use on BPA's Internal Network was largely developed in 2002
- Method merges a "Contract Accounting" calculation with a Powerflow for calculation of Existing Transmission Commitments (ETC):
  - Contract Accounting ETC calculation uses PTDFs (derived from powerflows) to approximate the impact on flowgates resulting from a summing of the GF and LT PTP contract demands*, NT load forecasts, LTF non-Federal generation rights, and an assumed FCRPS dispatch
  - Planning ETC calculation uses a powerflow to approximate the impact on flowgates resulting from inputs of load forecasts (for all GF, NT, and PTP loads), LTF non-Fed generation rights and an assumed FCRPS dispatch which is then "backed off" to ensure load/resource balance

* GF transmission contracts are generally modeled as PTP, with a few exceptions.

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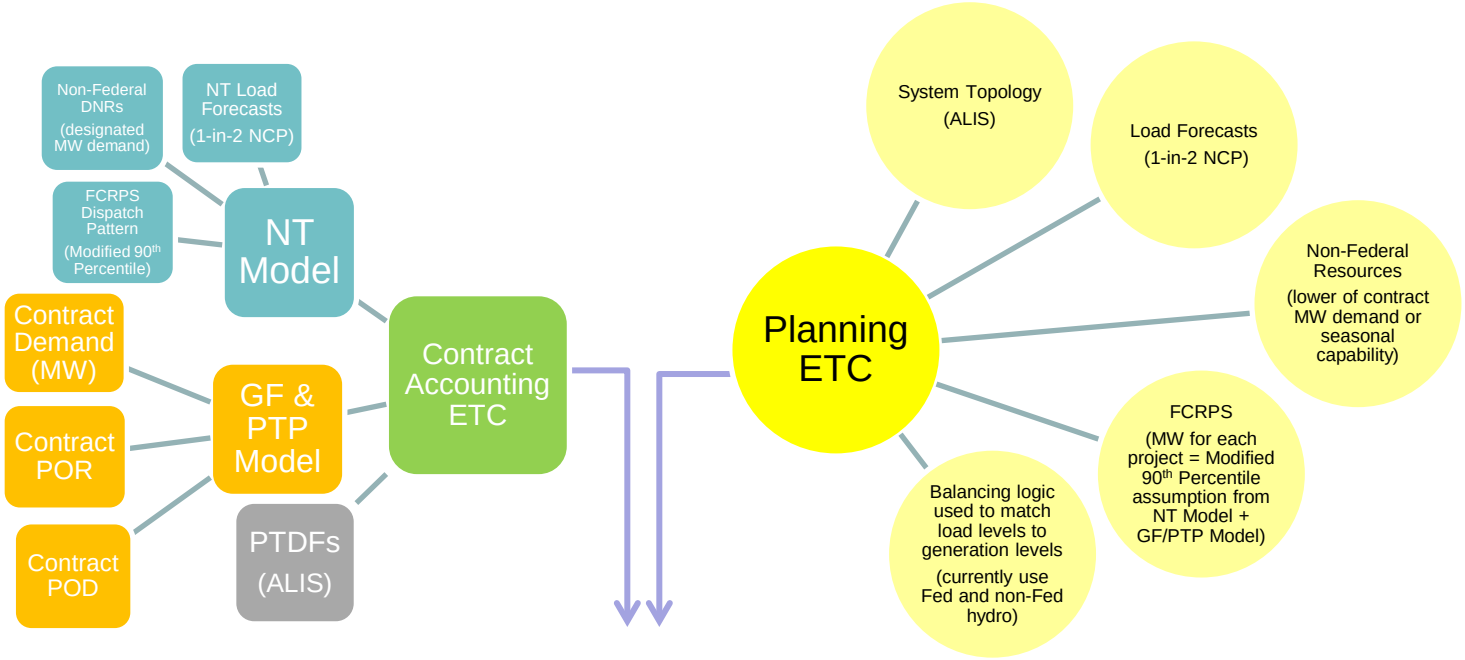
Current "Hybrid" LT ETC Calculation



Delta = Contract Accounting ETC – Planning ETC

Since: a) AMM ≅ 25% of Delta and b) ETC ≅ Contract Accounting ETC – Delta + AMM… **ETC ≅ Planning ETC + 25% of Delta**

This calculation is performed once per year and updates to the baseline ATC are referred to as the "LT Base Case Update".

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LT ATC Method Changes

- To streamline the Long-Term Firm Internal Network ATC calculation and align with other studies, BPA has decided to cease use of the Contract Accounting ETC, Delta, and AMM – instead, BPA will use the Planning ETC calculation and a more transparent uncertainty margin.
- Inputs to the Planning ETC calculation that require vetting:
  - Load levels
  - Wind resource levels
  - Non-wind resource levels
  - FCRPS dispatch(es)
  - Balancing logic
- Other ATC calculation decisions that require vetting:
  - Method for incorporation of load growth
  - Method for calculation and release of an uncertainty margin
  - Method for encumbering ATC for NT resource forecasts

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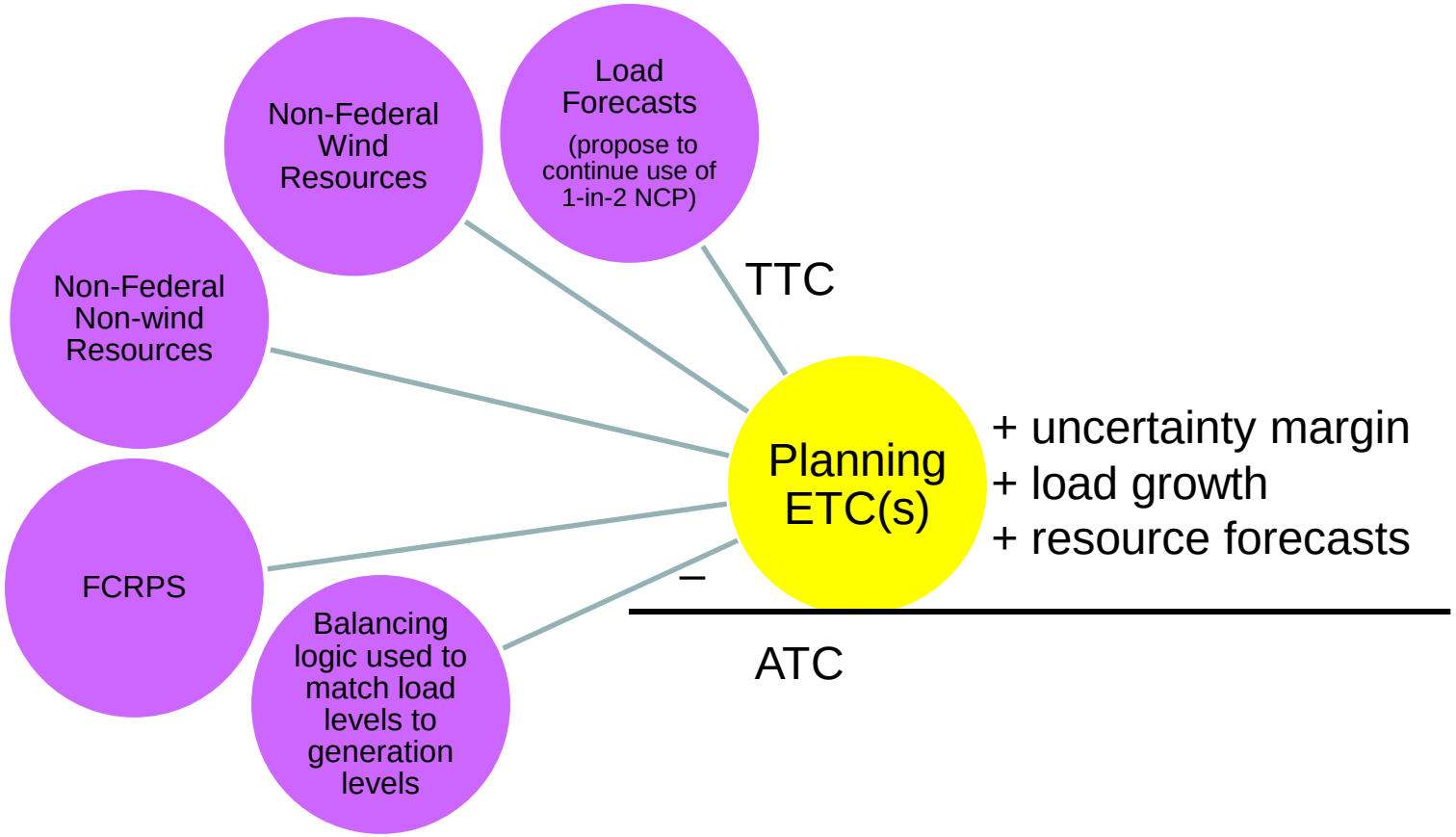
Future LT ATC Calculation



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Feedback

- BPA posted a questionnaire and opened a comment period from November 18 – December 4, 2015

Question	Mike Raschio	PSE	WPAG	NWCPUD	PNGC
1. Should BPA continue to use 1-in-2 NCP load forecasts?	Yes	Yes	Yes	Yes	Yes
2. Which assumption for wind?	60% or 100% of contract demand	Other, capacity factor of each plant	Historical peaks, capped by contract demand	100% of contract demand	100% of contract demand
3. Which assumption for other non-Federal resources?	Lower of contract demand or historical peaks	Contract demand, capped by nameplate	Lower of contract demand or historical peaks	Lower of contract demand or historical peaks	No response
4. Should BPA expand the FCRPS scenarios?	Yes, using adjusted nameplate	Yes, using historical peak	No response	Yes, using historical output coordinated with hydraulic constraints	Yes, using adjusted nameplate
5. How to balance the study?	Pro rata	Merit order	Pro rata	Other, don't know what to do now but would be ideal to use more realistic inputs	Pro rata
6. Is applying regional average load growth to ETC sufficient?	Yes	No, should model each county separately	Yes	No, should model large "spot" load growth individually and use the proposed method everywhere else	No, should model large "spot" load growth individually and use the proposed method everywhere else
7. How to determine uncertainty margin?	Percentage of TTC or difference between posted and highest ETC values	Other, use only MOD-008 compliant calculations	No response	Other, TRM already in TTC is sufficient	No response
8. What data would you like to see?	Output of test cases, based on 2017 ATC base case	No response	Magnitude of differences between various load forecasts	ATC results that send clear signals to the market	No response

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Load Levels

- Status quo – for those load forecasts BPA produces, 1-in-2 NCP load forecasts are used in:
  - Reliability Planning studies
  - LT and Short-term ETC studies
  - Cluster Studies
- Staff does not propose a change at this time.

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Non-Federal Resources

- Wind – at least two scenarios will be run: one with wind "off" and backed up using balancing logic and a second with wind "on" at one of the below levels
  - Contract or designated demand, capped by nameplate
  - Contract or designated demand, capped at 60% of nameplate
  - Historical peaks, capped at contract demand or designated
  - Capacity factors, capped at contract demand or designated
  - Others?
- Non-wind
  - Contract or designated demand, capped by nameplate
  - Historical peaks, capped at contract demand or designated
  - Contract demand, or designated capped at lower of nameplate or historical peaks Merit Order, per production cost models
  - Others?
- Current BPA staff proposal:
  - Wind: use contract or designated demand, capped by nameplate
  - Non-wind: use contract or designated demand, capped at lover of nameplate or historical peaks

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FCRPS

- Seasonal dispatches to test impact of delivery of the Canadian Entitlement Return
- Three additional seasonal dispatches which separately stress the hydro system at Upper Columbia, Lower Columbia, and Lower Snake. Stress could be derived from:
  - Nameplate output,
  - Adjusted nameplate output (to reflect expected FCRPS generator outages), or
  - Historical output
- BPA staff have not arrived at a preferred option at this time.

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FCRPS Dispatch Options

Big 10 Generator/Group (August)	2017 ATC Base Case	Historical Maximum	Nameplate Adjusted	Nameplate
Chief Joseph	1,878	2,262	2,307	2,607
Coulee, Grand Total	4,647	5,941	6,212	6,848
Upper Columbia Gen	**6,525**	**8,203**	**8,519**	**9,455**
Bonneville	483	882	1,002	1,228
Dalles, The	677	1,474	1,858	2,052
John Day	1,050	1,781	2,174	2,480
McNary Total	593	805	901	1,120
Lower Columbia Gen	**2,803**	**4,942**	**5,935**	**6,880**
Ice Harbor	138	542	435	693
Little Goose	252	727	734	930
Lower Granite	219	727	758	930
Lower Monumental	221	727	689	930
Lower Snake River Gen	**830**	**2,722**	**2,616**	**3,483**

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Balancing Logic

- Status quo – Federal and non-Federal hydro decreased to achieve balance
- Merit order – backing off the most expensive resources first, per a production cost model, as is used in the Cluster Studies
- Pro rata – backing off all resources by percentage needed to achieve balance, which would have resulted in a ~10% drop in the last LT ATC Base Case
- Increasing load levels to reflect 1-in-20 forecasts which, for each 100 MW already modeled in the case, would result in ~18 MW of additional load
- Increasing export levels to maximum
- Others?

- BPA staff currently propose to use pro rata logic to back off all resources to achieve base case balance.

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ETC Selection

- Several seasonal cases and/or scenarios will be produced for each LT ATC Base Case, each of which will calculate a possible ETC for each flowgate. Which should be used to determine ATC?
  - The highest calculated value for each flowgate
  - The median calculated value for each flowgate
  - The lowest calculated value for each flowgate

- BPA staff have not arrived at a preferred option at this time.

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Load Growth

- Modify automated tools to calculate impact of incremental load growth, above that including in most recent LT ATC Base Case, using PTDFs (cost and labor intensive)
- Apply the regional average load growth rate to the Planning ETC values
- Others?

- BPA staff currently propose to apply the regional average load growth rate to ETC values.

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Uncertainty Margin

- Hold aside a percentage of each flowgate's TTC
- To the extent multiple scenarios are run and the "highest of" isn't selected as input to ETC calculations, use the difference between the "highest of" and the selected case as a margin
- Others?

- BPA staff currently propose to adopt the difference between the highest and selected ETC as an uncertainty margin.

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Releasing Uncertainty Margin

- Hold until such time as a method for release to the shorter term markets is developed (TBD)
- Hold and release only to the non-firm market

- BPA staff currently propose to release uncertainty margin only to the non-firm market until a method can be developed to release on a firm basis.

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Encumbering NT Resource Forecasts

- BPA staff propose to continue use of the method implemented as part of the initial TLS transition:
  - Encumber ETC within the LT ATC Base Case for all DNRs
  - Encumber ATC via PTDF calculations for the highest impact on each flowgate for all forecasted resources
  - Recently adopted in the 2016 ATC Base Case update
- Once forecasted resources are designated, they will be encumbered in the next LT ATC Base Case.

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Timeline for LT ATC Changes

- January 20 – February 3, 2016: comment period
- February 2016: decision(s) for these ATC changes
- March 2016: workshop to announce decision(s)
- March – April 2016: updated ATC Methodology documents posted for written comment period
- May 2016: updated ATC Methodology documents finalized
- July – August 2016: ATC process changes incorporated into LT Base Case Update

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Follow Up

- If you have any feedback on the questions related to this presentation, which will be posted tomorrow, please submit them by close of business **February 3, 2016** to the Tech Forum e-mail box, with "**TLS-ATC comment**" as the subject line, at: techforum@bpa.gov

- Other ATC-related questions should be submitted using the usual process:
  - Submit them to the Reservation Desk e-mail box at: tblresdesk@bpa.gov or
  - Call the Reservation Desk at: (360) 418-8499

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