

# New Network Flowgates

October 25, 2012



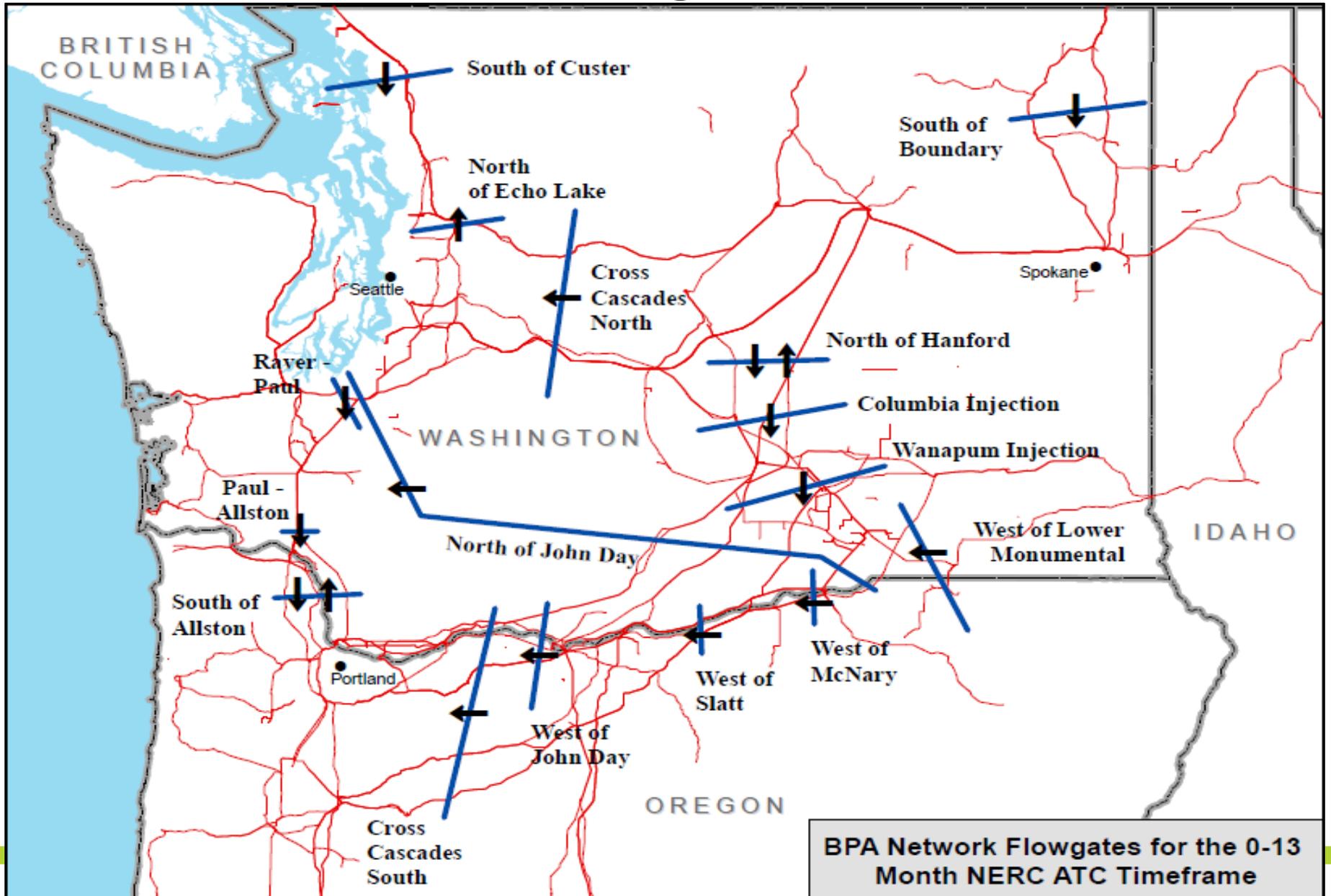
# Agenda

- New Network Flowgates
- Puget Sound Area Flowgates
- Mid-C Flowgates
- South to North Flowgates
- S of Boundary and W of Lo Mo

# New Network Flowgates

- As a reminder, we identified the following flowgates that must be added by February 15, 2013 to comply with MOD-30 R2:
  1. North of Echo Lake (S>N)
  2. South of Custer (N>S)
  3. Columbia Injection (N>S)
  4. Wanapum Injection (N>S)
  5. West of Lower Monumental (E>W)
  6. South of Boundary (N>S)
  7. South of Allston (S>N)
  8. North of Hanford (S>N)
- The current Monroe-Echo Lake (N>S) flowgate will be removed with the addition of the South of Custer flowgate.
- For the initial implementation, these flowgates will only be added to the 0-13 month timeframe

# New Flowgates Map



# Puget Sound Area Flowgates

- New Flowgates in the Puget Sound Area (PSA) are needed because the Northern Intertie (NI) does not fully protect for the limiting elements in the PSA.
- To determine the flowgates, various possible paths were identified and then analyzed to see which was the most effective for providing curtailment relief.
  - We ran a series of scenarios varying outage conditions and location of generation re-supply and tested the curtailment effectiveness of the multiple flowgates.
  - The curtailment effectiveness was determined by comparing the MW cut versus the relief that was calculated on the limiting element(s) as a result of the curtailment.
- The results showed that the most effective flowgate configuration for managing flows on the limiting elements studied are the following:
  - North of Echo Lake (S>N)
    - Echo Lake – Monroe 500kV
    - Echo Lake – Maple Valley 500kV
    - Covington – Maple Valley 230kV
  - South of Custer (N>S)
    - Custer – Monroe #1 500kV
    - Custer – Monroe #2 500kV
    - Custer – Murray 230kV
    - Custer – Bellingham 230kV

# Puget Sound Area Flowgates (cont.)

- For the System Operating Limit studies, the current nomograms from the Northern Intertie will be modified and used for the new PSA flowgates.
  - Nomograms will continue to be posted on BPA's website.
  - The NI SOL studies will be simplified.
- The Existing Transmission Commitments (ETC) will be calculated using a power flow analysis like all other flowgates (see *BPA's ATCID*)
- The PSANI Curtailment Calculator will likely be retired with the addition of these flowgates.
- The chart below shows a comparison between an analysis of the PSANI curtailment calculator and iCRS curtailments on the North of Echo Lake (S>N) Flowgate for March 1, 2012 HE 21 system conditions.

	<b>PSANI</b>	<b>NOEL</b>
MW Curtailed	550	566
1-NS	100	148
2-NH	110	108
7-F	340	310
MW Relief	222	222

# Mid-C Flowgates

- The Columbia Injection and Wanapum Injection flowgates are needed to address limiting elements and contingencies for BPA's Balancing Authority interconnections with the Mid-C BAs.
- BPA has been managing these flowgates operationally for quite some time. These flowgates are now being added for Available Flowgate Capability (AFC) calculations.
- The operating procedures lined out in the Dispatchers Standing Orders for these two flowgates will remain the same.
- Wanapum Injection (N→S) is defined as follows:
  - Midway-Vantage #1 230kV line
  - Priest Rapids #3 - Midway #3 – Wanapum 230kV line
- Columbia Injection (N→S) is defined as follows:
  - Grand Coulee #1 - Columbia 230kV line
  - Grand Coulee #3 - Columbia 230kV line
  - Rocky Reach – Columbia #1 230kV line
  - Rocky Reach – Columbia #2 230kV line
  - Valhalla #1 - Columbia 115kV line
  - Valhalla #2 - Columbia 115kV line

# South to North Flowgates

- South of Allston (S>N) and North of Hanford (S>N) need to be added because we have exceeded 24 hours of curtailments on these paths within the last 12 months and to protect for limiting south to north conditions.
- New power flow cases will be developed for these flowgates to capture south to north flows.
  - Existing Transmission Commitments (ETCs) for these new flowgates will be based on new light load cases and set up primarily for spring and fall conditions.
- South of Allston (S→N)
  - Keeler-Allston 500kV
  - Trojan – St. Marys 230kV
  - Trojan – Rivergate 230kV
  - Ross – Lexington 230kV
  - St. Helens – Allston 115kV
  - Merwin – St Johns 115kV
  - Seaside – Astoria 115kV
  - Clatsop 230/115kV
- North of Hanford (S→N)
  - Grand Coulee – Hanford #1 500kV line
  - Schultz-Wautoma #1 500kV line
  - Vantage – Hanford #1 500kV line

# South of Boundary and West of Lower Monumental

- The South of Boundary (N>S) and West of Lower Monumental (E>W) Flowgates are needed to protect for limiting elements in their respective areas.
- Both flowgates have been managed operationally for quite some time and will now be added for AFC calculations.
- There will be some changes to the Dispatchers Standing Orders, in particular how curtailments are issued.
  
- South of Boundary (N→S)
  - Bell - Boundary #1 230kV line
  - Bell – Boundary #3 230kV line
  - Usk – Boundary #1 230kV line
  - Boundary 230/115kV transformer
- West of Lower Monumental (E→W)
  - Ashe – LoMo 500kV line
  - Hanford - LoMo 500kV line
  - McNary - LoMo 500kV line