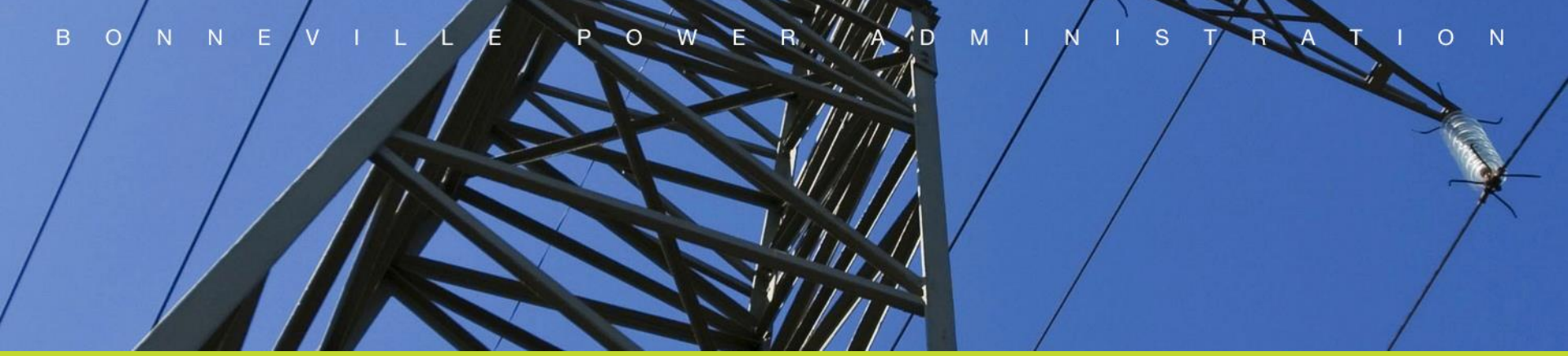


Bonneville Power Energy Imbalance Market Meeting

January 12, 2016

Future EIM Transmission Access Stakeholder Meetings in Portland at BPA's Rates Hearing Room:

Feb 18 – TH
Mar 30 – W
Apr 13 – W
May 19 – TH
June 16 – TH
July 26 – T
Aug 16 - T
Sept 22 – TH
Oct 27 – TH
Nov 14 – M
Dec 20 - T

Agenda

- Customer Comments from Sept. 30 Customer Forum
- Bubble Diagram
- Stakeholder Schedule (Near-term schedule)

Purpose of this Stakeholder Process

- Develop a risks and controls framework to assess risks to customers' existing and future transmission usage rights and evaluate the adequacy of existing BPA controls to protect those rights.

- Transparently develop a risk mitigation and control framework that ensures BPA meets its obligations and protects customer rights.

- Provide information to aid EIM Entities seeking to understand how they might be able to use their transmission rights on the Federal Columbia River Transmission System (FCRTS) if they were to join the California Independent System Operator Energy Imbalance Market (CAISO EIM).

Objectives

- Build understanding of EIM participant transmission use.
- Identify and manage risks for near-term EIM participant transmission use.
- Inform future planning and proceedings through a transparent process.
- Develop policies on the use of federal transmission for intra-hour operations.
- Consider the issues on an integrated, rather than case-by-case, basis.

Customer Comments

Kick-Off Transmission Forum Work Shop on September 30, 2015

- BPA will focus on three primary areas during the Stakeholder process:
  1. Operations and Reliability
  2. EIM Participant Access to Transmission
  3. Transfer Service

- Principles for EIM transmission access implementation:
  1. BPA's ability to maintain reliability is not diminished.
  2. BPA continues to provide transmission service consistent with the quality and reliability of service required by its OATT and any other agreements and obligations.
  3. BPA manages impacts to its customers in EIM Balancing Authorities.

Customer Comments

Kick-Off Transmission Forum Work Shop on September 30, 2015

- Written Comments received from:
  1. EWEB
  2. ICNU
  3. NRU
  4. PGP
  5. PNGC
  6. Powerex Corp
  7. PPC
  8. PSE
  9. Snohomish PUD

- Frequency of Meetings: Request that BPA hold monthly meetings

- Comments requesting a transparent public process and for a presentation on lessons learned from the PacifiCorp (PAC) EIM integration

- High Level Themes:
  1. Contract Rights
  2. Curtailment / Congestion Management
  3. Cost-Causation
  4. EIM Operational Controls / Performance

Customer Comments: Contract Rights

- Written Comments on Contract Rights received from:
  - EWEB
  - PGP
  - PNGC
  - Powerex Corp
  - PSE
- Customer Comments:
  - Will EIM participants be allowed to use their existing transmission rights?
  - Please define firm rights on transmission vs. flowpaths
  - Which contracts will EIM participants be utilizing?
  - Please define capacity owner's rights to DTC on the COI
  - Discussion on flowgate DTC limits and how they will be allocated

- BPA Response:
  - BPA will show the scheduling paths on the FCRTS that EIM participants will utilize, and identify the transmission contracts associated with those scheduling paths.
  - BPA has not identified a need to change the OATT in order for customers to utilize their rights for EIM participation.
  - BPA will apply the current OATT and Business Practices to EIM participation.
  - BPA will evaluate in this stakeholder process if any modifications to Business Practices are needed prior to PSE's EIM go-live.

Customer Comments: Curtailment / Congestion Management

- Written Comments received on congestion management from:
  - ICNU, PGP, PNGC
- Customer Comment:
  - Concern over impacts on short-term curtailments due to increased use of DTC and 15-minute scheduling
  - Request to go over the Network flowgate curtailment calculator
  - Request to develop appropriate EIM congestion tools
  - Questioning if the Upper Limits and Lower Limits have worked as anticipated
  - Request to provide an update on BPA's relief obligation proposal
- BPA Response:
  - BPA has an existing BP concerning the use of Variable Transfer Limits (VTLs) by Security Constrained Economic Dispatches. The CAISO will continue to limit use within those VTLs. BPA is monitoring usage to ensure it is within reliability and contractual parameters. These limits apply to 5-minute dispatches are not limiting at this time for 15-minute scheduling.
  - BPA will discuss curtailment calculation and the relief obligation proposal in upcoming monthly meetings.
  - BPA intends to discuss in with stakeholders the performance of those controls and address their continued use and expansion to other EIM entities in upcoming monthly meetings.

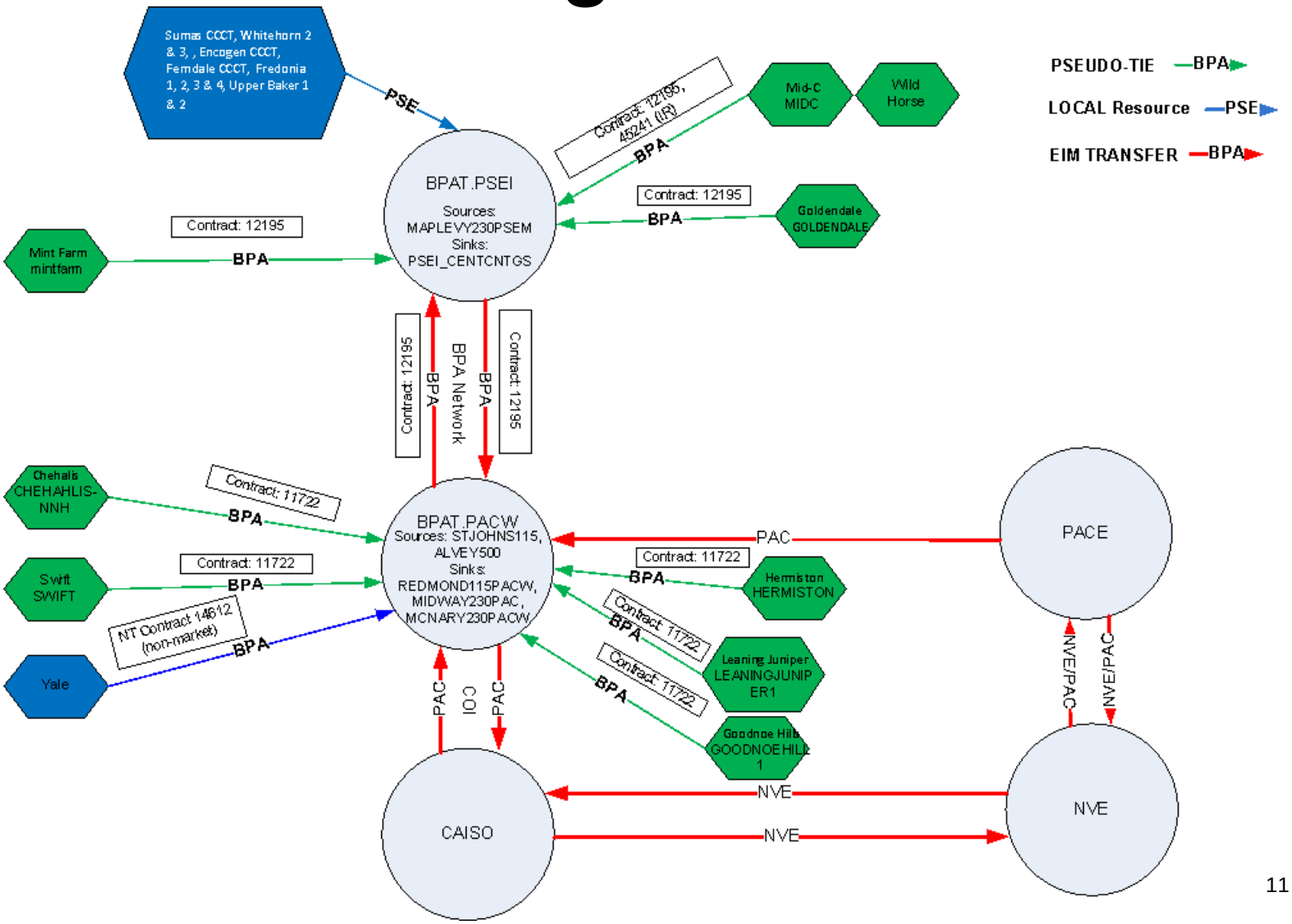
Customer Comments: Cost-Causation

- Written Comments on cost-causation received from:
  - NRU
  - PGP
  - PNGC
- Customer Comment:
  - Request to add a discussion on cost-causation
- BPA Response:
  - BPA is managing cost causation through reimbursement agreements and will continue to ensure costs are not inappropriately spread to other customers.
  - Consistent with cost causation, PSE has agreed to reimburse BPA for EIM-specific costs that BPA will incur on PSE's behalf.

Customer Comments: EIM Operational Controls / Performance

- Written Comments received on operational controls and performance from:
  - NRU, PGP, PNGC, PPC, PSE, Snohomish PUD
- Customer Comment:
  - Request for on-going check-in on EIM performance
  - Questioning BPA's visibility into EIM transfers
  - How will BPA distinguish which dynamic use of Network might push BPA over System Operating Limits (SOLs)?
  - Establishment of non-discriminatory allocation methodologies for DTC given BAA to BAA transfers
  - Need for operational controls
- BPA Response:
  - BPA has not identified negative impacts on load service and will discuss this evaluation as part of the stakeholder process.
  - BPA will share data and analysis of ongoing EIM operations.
  - BPA will continue to monitor, evaluate and share information with customers.

EIM Bubble Diagram



Description of EIM Movement

PSEUDO-TIE —BPA►

Delivery of PSE/PAC generator to the PSE BA over Firm BPA transmission via a PSEUDO-TIE tag. These tags and deliveries exist today for PSE/PAC's BA operation.

LOCAL Resource —PSE►

Generation that is "local" to the PSE/PAC BAs (i.e. it does not require BPA transmission to be delivered to PSE/PAC load).

EIM TRANSFER —BPA►

EIM Transfers represent the net market dispatch among the EIM Entity BAAs. These transfers exist today for PAC, but PAC uses its own transmission for these transfers. They are tagged as system to system and use NORMAL tags for 15-Minute dispatches and DYNAMIC tags for 5-minute dispatches.

Description of Controls – EIM Transfers

- Currently EIM Transfers exist between PACW, PACE, CAISO, and NV Energy. The most impactful EIM Transfers on the FCRTS flow over the COI on PacifiCorp's transmission.
- These EIM Transfers use standard scheduling practices.
  - 15-Minute market dispatches are on NORMAL tags.
  - 5-Minute market dispatches are on DYNAMIC tags, and are limited to a common allocation method.
    - PAC, PGE, and BPA each govern DTC use under their own business practices and tariffs. The common allocation methodology and process is described in BPA's Dynamic Operating and Scheduling Requirements Business Practice.
- PSE will effect EIM transfers across BPA's system to PACW starting in October 2016. BPA is currently contemplating scheduling and tagging requirements.

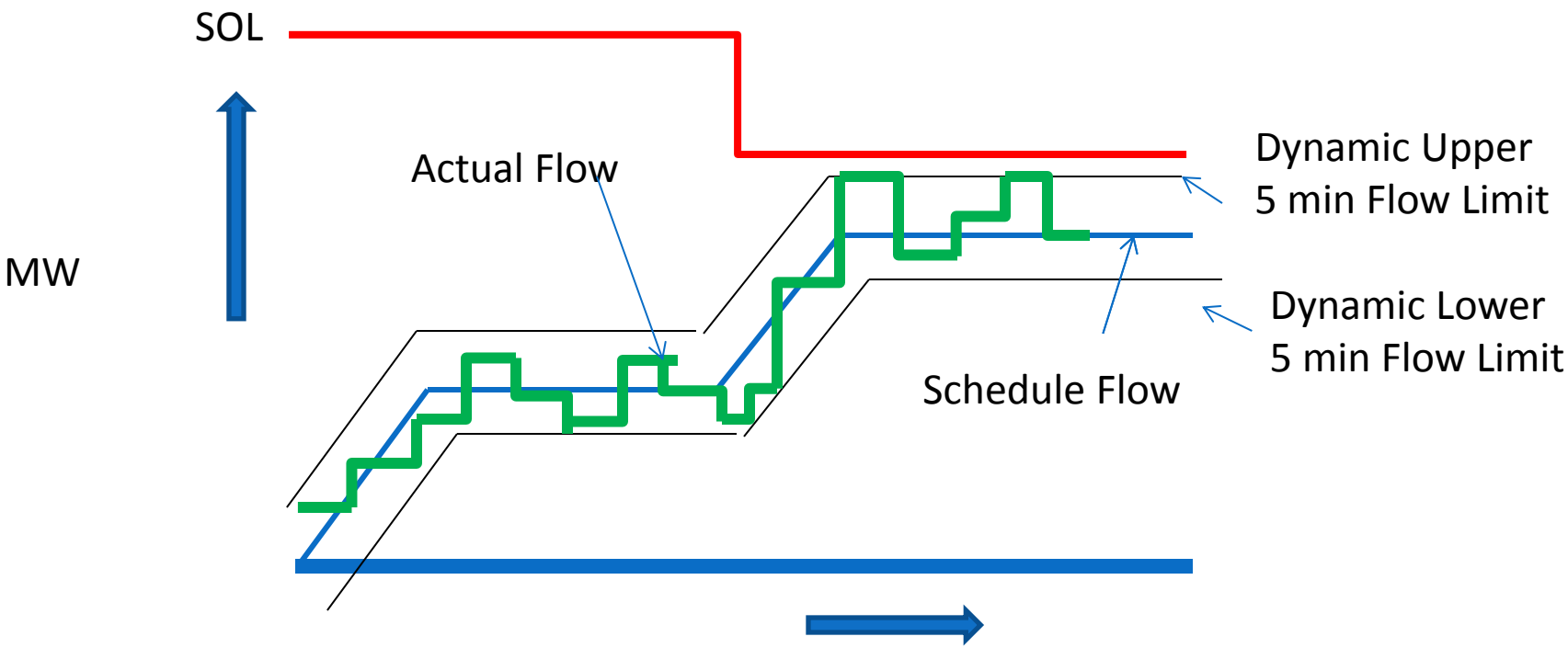
Data in Support of EIM Transfers

- EIM Transfers are tagged
  - As Path Operator of the COI BPA receives tag data for all COI tags
- Dynamic requests
  - BPA administers the DTC allocation process for all COI transmission providers through its TSAS system
- Real-time dynamic signals
  - BPA monitors and has real-time controls for actual dynamic dispatches over the COI

Description of Controls – Pseudo-Ties

- EIM Participants that use the FCRTS typically wheel remote resources through pseudo-tie tags. These tags thus far have all pre-dated the EIM.
- The total flows for the EIM and other uses is limited by the total contract demand less any curtailment action.
- 5-minute market dispatches are limited by limits set under BPA's Dynamic Transfer Limits: Operating Procedures for Use of Upper and Lower Transfer Limits on BPA's Transmission System Business Practice.
- BPA sets the effective Upper and Lower limits.
- The limits are currently set as a function of empirically acceptable impacts, such as historic use.
- Limits are automatically set to zero in real-time (via EIDE) if firm curtailments are taking place.

Upper and Lower Limit Overview



Upper/Lower Limits are

Data Transfer in Support of Upper and Lower Limits

- BPA sends effective Upper and Lower Limits to the CAISO in real time.
- BPA receives data on the EIM in real-time
  - Advisory 5-minute and 15-minute dispatches
  - Binding 5-minute and 15-minute dispatches
  - Forecasted 5-minute and 15-minute Market Flow
  - Binding 5-minute and 15-minute Market Flow
  - Load forecasts for EIM Balancing Authority Areas
  - Unit status
  - Shift factors for EIM Participating Resources impacts on BPA's flowgates
  - Net Scheduled Interchange and load for EIM Balancing Authority Areas and CAISO

Local Generation

- EIM Participants typically have “local” generation that may be bid in the EIM.
- This generation is typically directly connected to their transmission system and BPA is not a transmission service provider or operator and is therefore not under BPA control.

Schedule

Short-term Schedule: This process timeline is based on the go-live timeline for PSE.

	Start	Finish
BPA's EIM Participant - Transmission Access - Short-Term - Project Schedule	6/1/2015	10/3/2016
Section 23/EIM Transfer Issues	completed	
Use of Network (WECC) Model - CAISO accurately modeled our network	on-going w/ quarterly updates	
Stakeholder Process on EIM Implementation	8/17/2015	7/1/2016
Reimbursable Agreement	6/1/2015	12/11/2015
UL Limit Design	6/1/2015	9/15/2016
UL Limit Calculations	6/1/2015	7/1/2016
Data flows and Schedules	9/28/2015	9/28/2016
Provide Mechanism for how to transfer data (BPA--> CAISO)	10/1/2015	7/13/2016
Provide Mechanism for how to transfer data (CAISO --> BPA)	9/28/2015	9/28/2016
Market Constraints modeling	1/17/2016	3/28/2016
Study/Analysis of EIM and UL Limit Performance	1/1/2016	8/1/2016
Market Simulation Testing and Remediation	1/1/2016	9/1/2016
Market Simulation Begins	5/2/2016	9/1/2016
Production Readiness	Pre-PSE FERC filing	10/1/2016

Long-term Schedule: Allows BPA to develop new Business Practices that all EIM participants will follow. It will take into account the changing northwestern market.

Deliverables from this process

- Articulate a control framework and plan for monitoring and improvement.
  - Manage operational and commercial risks.
  - Identify areas for improvement.
- Validate effectiveness of EIM control framework.
  - Identify gaps and resolve as needed.
- Maintain a transparent set of rules for customers to use their transmission rights for EIM participation.

Next Steps

- Process Overview
  - Focus on short term schedule through October 2016
    - Data evaluation
    - Discussion of impacts and performance
    - Identification of operational controls
    - Long-term and holistic look forward in decision making
  - Next meeting on February 18 at BPA's Rates Hearing Room

Questions….

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