

Wind Integration Program: Balancing the Future

Initial Discussions

3/07/2012



Background

- BPA has implemented a number of cutting edge operational, procedural and policy initiatives over the last three years to enable safe, reliable variable generation integration
- As we look to the future, additional variable generation is expected to integrate into the BPA system. However the pace and magnitude of the forecasted level of variable generation integration is uncertain
- There are limits to the ability of the FCRPS to provide balancing reserves that may come into play as the amount of variable generation integrated into BPA's system increases
- The goal for today is to share some initial thinking and begin a discussion with you on a longer-term balancing strategy

BPA Has Successfully Implemented Significant Initiatives

Projects

DSO 216 - On going

Dynamic Transfer

- WIST
- DTC Phase 2

Enhance BPA Forecasting

Supplemental Service

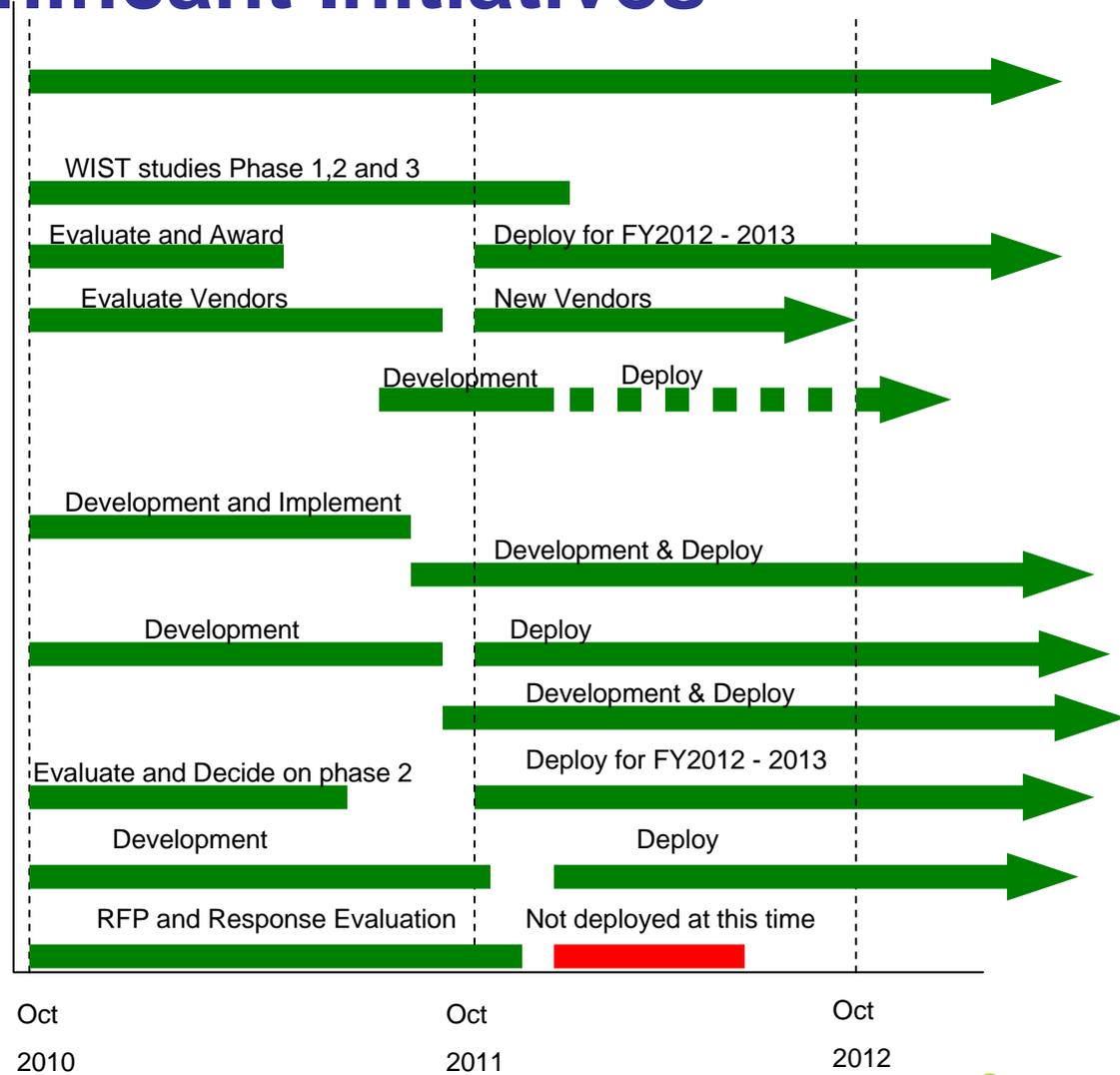
Intra-hour Scheduling

- Phase 2
- Phase 3
- CAISO
- CIH

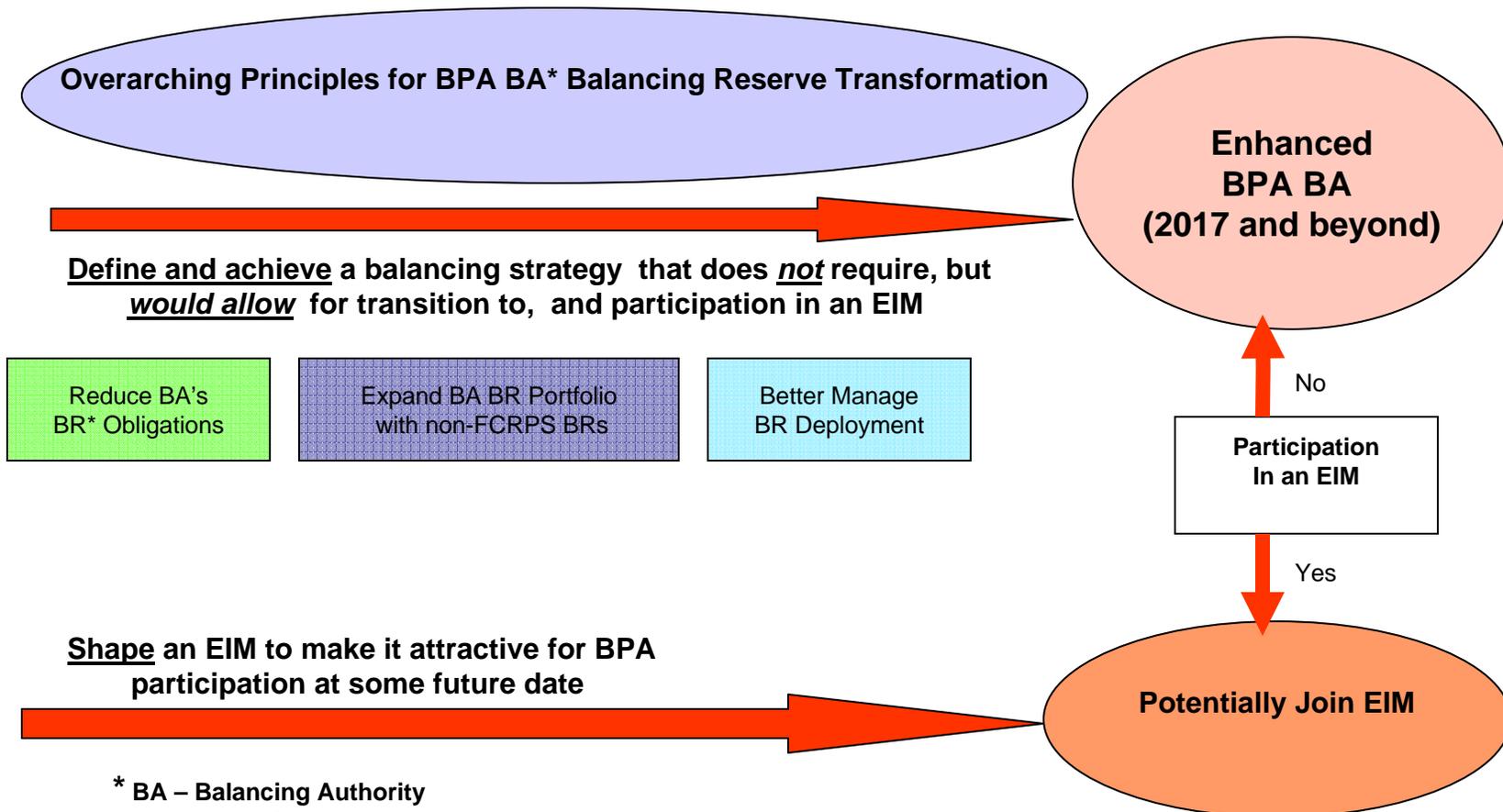
Customer Supply of GI Phase 2

ITAP (WebEx)

Third Party Supply



Proposed “Two-Pronged” BPA Balancing Reserve Strategy



* BA – Balancing Authority
BR – Balancing Reserves

Themes for Elements of the Enhanced BPA BA (EBBA)

Determination of Base Level of Service (BPA's Balancing Reserve (BR) requirement):

- A. Determine the BRs needed based on the Wind Fleet:
 - *Installed Wind Capacity* – BPA will continue to forecast for upcoming rate periods.
- B. Define the amount of reserves the FCRPS can supply:
 - *FCRPS limits* – FCRPS inventory, BPA risk tolerance, and Reliability.
 - *Sources of Variability* – Load, Thermal, other.
- C. Base Level of Service may exceed the BRs the FCRPS can supply:
 - *Customer desire* – Function of Customer desire for BPA to acquire incs and or decs above FCRPS limits for the pooled BPA service.
 - *Incs and Decs* – The level of service for Incs compared to Decs may be different
- D. Wind Sinking in the BPA BA: BPA looking at issues associated with this.

Themes for Elements of the Enhanced BPA BA (EBBA)

BPA will attempt to acquire reserves to make up any shortfall between the FCRPS' ability to supply reserves and the Base Level of Service:

- *Purchases up to Base level* - Any gaps between the Base Level of Service and the FCRPS limits (taking into account BR contributions from self-supply and other programs) will be filled by BPA through acquisitions.
- *Seasonal or Quarterly shaped* – The amount of Reserves acquired from non-federal resourced may reflect the season ability of the FCRPS to supply.

Themes for Elements of the Enhanced BPA BA (EBBA)

Self Supply:

- *Self Supply of VERBS/DERBS* – Need to maintain some form of self supply of capacity for generation and load.
- *Business Practices* – Further define BPs related to self supply.

Enhanced Supplemental Service:

A. Allow Customers that desire a higher level of service to acquire Balancing Reserves through a Supplemental Service:

- *Supplemental Balancing Reserves* – Purchased from non-federal resources.
 - i. Explore additional short term sales of balancing reserves from Federal resources.
- *Purchase time frame* – Modify BPA's Supplemental Service policies to be more flexible and less costly, e.g. – Allow purchase of Supplemental Reserves on a much shorter time frame (day ahead?).

Themes for Elements of the Enhanced BPA BA (EBBA)

DSO 216

- Maintain and enhance DSO 216 to protect reliability.

Scheduling:

- *Tagging* – Tagged as agreed to by seller and buyer in accordance with each BA's rules.

Intra-Hour Scheduling:

A. BPA will encourage increased participation in BPA's committed Intra-Hour program

- *CIH* – Substantial fraction of the wind fleet scheduled on Committed Intra-Hour Schedules.
- *CAISO intra-hour scheduling* – BPA will encourage California BAs (and other NW BAs that do not currently do so) to accept half-hour schedules.

Themes for Elements of the Enhanced BPA BA (EBBA)

Dynamic Scheduling:

- *Dynamic Scheduling* – Facilitate ability to schedule and dispatch dynamic resources in-hour.
- *DSS* – Work to Implement and Standardize DSS.

DTC:

- *DTC* – Consider DTC growth options to accommodate increased flexibility for customers to supply BRs as needed.
- *DTC Policies* – Modify BPA’s DTC policies to facilitate increased movement of regional balancing resources within-hour and to provide greater certainty to customers.

Themes for Elements of the Enhanced BPA BA (EBBA)

Wind Forecast:

- *Centralized Forecast* – BPA will continue development of Centralized Forecast for operational purposes.

Dispatch decisions and Visibility:

- *Third Parties* – work to define board interoperability between and among third parties in BPA's AGC
- *Visibility Tool Kit* – Better manage BR deployment by creating better visibility tools, by dispatching more efficiently, and by better forecasting the need for BRs - includes:
 - Dispatch Stack Tool
 - Security Constrained Dispatch tool
 - Monitor Overall Reserve use
 - Monitor Non-Federal Reserve Deployment
 - Predictive uses of information
 - Facility Specific Data

Cost Allocation Themes

1. Cost of base level of service allocated to load then balancing reserve used for Variable Generation.
2. Costs of Non-Federal Acquisitions for Balancing Reserves beyond the Base Level of Service allocated to the parties requesting the additional balancing reserve.

Development of Next Phase of Wind Initiatives

1. Increase the ability of market participants, including BPA, to make shorter-term purchases of balancing capacity to meet the balancing needs of their Variable Energy Resources.
2. Develop the advanced systems and tools needed by the BPA BA for better visibility, efficient dispatch, and improved forecast of Balancing Reserves needed
3. Maturing current initiatives to support the above objectives.