

Managing Imbalance Accumulations and Patterns

2012 BPA Rate Case
Follow-Up Workshop

January 19, 2012



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Background

- The BP-12 Partial Transmission Settlement Agreement covered most of the transmission rates and the two required ancillary service (Scheduling, System Control, and Dispatch Service and Reactive Supply and Voltage Control from Generation Sources Service) rates.
- The Partial Transmission Settlement Agreement was signed by BPA in January 2011.
- The Settlement Agreement contained commitments to hold discussions with interested parties on various topics.



Scope and Objectives

- **Partial Transmission Settlement Agreement, BP-12 Final ROD, July 2011, BP-12-A-02:**
 - “5.b) During the Rate Period, BPA will hold discussions with interested parties and accept and respond to written comments regarding ways that generators can operate to prevent or mitigate cumulative imbalances and patterns of under-delivery or over-use of energy. These discussions will not include discussions of the Persistent Deviation charge or the criteria for Persistent Deviation.”



Scope and Objectives

- Prevent or mitigate cumulative imbalances
 - Provide historical data
 - Initiatives to address cumulative imbalances

- Prevent or mitigate patterns of imbalance
 - Provide historical data
 - Initiatives to address patterns of imbalance

- Discuss ways scheduling entities can avoid prolonged schedule errors

- Process to accept and respond to written comments



Balancing Service Definition

- Generation imbalance and energy imbalance were addressed in the Generation Inputs section of the BP-12 Rate Case.

- In policy testimony (BP-12-E-BPA-23) BPA clarified that.
 - Variable Energy Resource Balancing Service (VERBS) and Dispatchable Energy Resource Balancing Service (DERBS) are services in which BPA commits to make a specific amount of balancing reserve capacity available for specific uses, given specific assumptions about the nature of that use.
 - BPA plans operations based on an expected distribution of deployments associated with unpredictable schedule errors, which are expected to be random, unbiased, and net to zero over relatively short periods of time.
 - Under a set of planning parameters that offered a firm capacity commitment (available for any purpose the user chose), the Federal Columbia River Power System (FCRPS) would have much less available capacity.

- BPA did not price reserves based on an assumption that parties would use balancing reserves to cover longer periods of avoidable schedule error.



Generation Imbalance Accumulations

- The rate case methodology for calculating balancing reserves is based on a persistence schedule in which the wind generator output at hour:30 becomes the schedule for the following hour (a.k.a. 30/60 persistence scheduling). Energy storage or draft over longer periods of time is not intended to be part of the balancing service provided by BPA.
- A 30/60 (or 30/30) persistence schedule or any schedule that produces an unbiased pattern of errors results in a predictable, small amount of imbalance.
- Unpredictability in energy accumulation leads to forced marketing which disrupts BPA's marketing and operational planning. During periods of constrained markets BPA's ability to resell or purchase to get back to operational plan may be limited. Forced marketing creates economic risk that was not accounted for in pricing VERBS.
- During FY 2010, BPA experienced a significant amount of accumulated imbalance energy by various generators and loads (Generation Inputs Study, BP-12-FS-BPA-05, page 128)

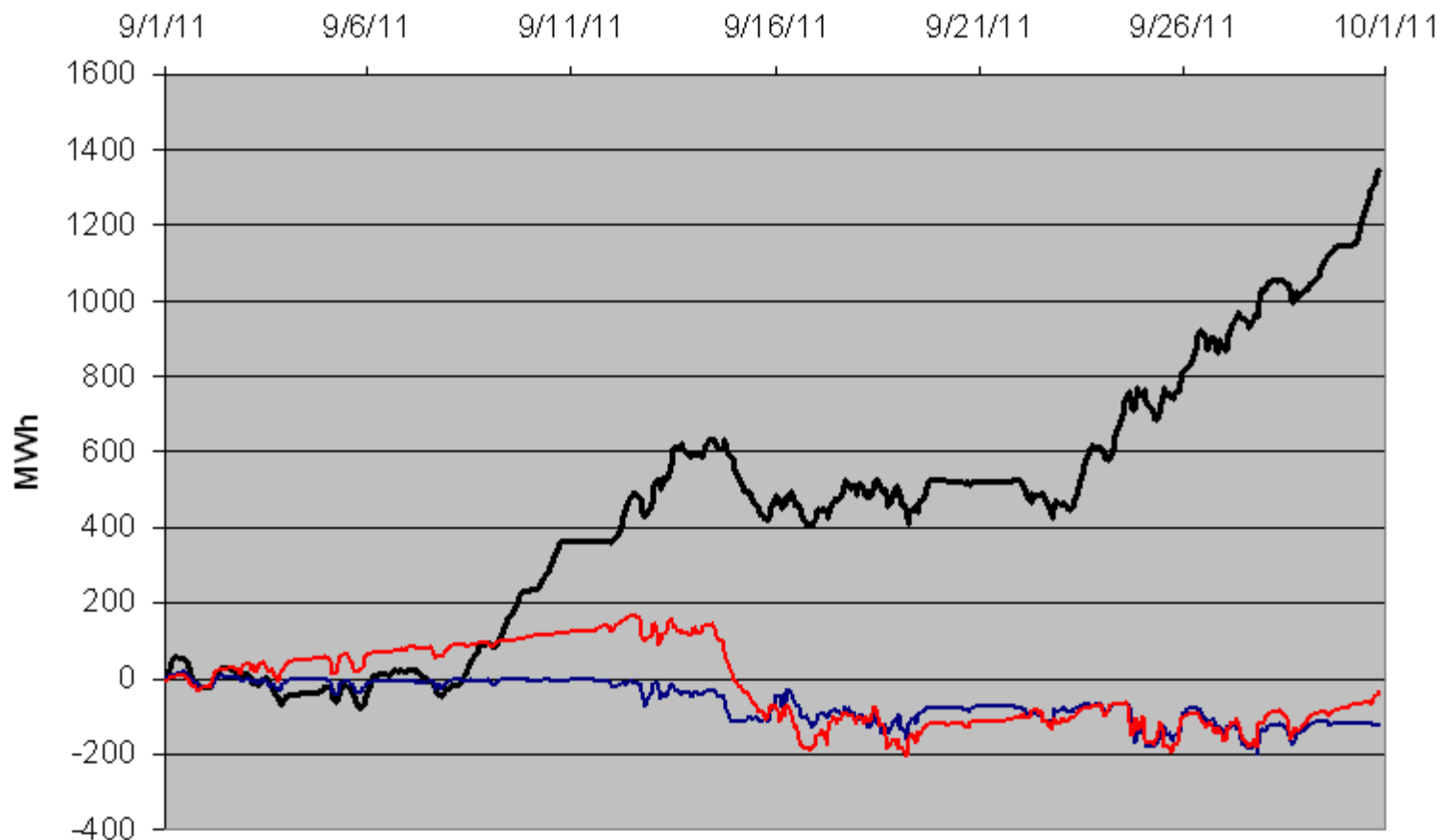


Generation Imbalance Accumulation Examples

- Accumulation of imbalance from a 30/60 minute persistent schedule would have been 8 MWh of imbalance for wind fleet for the month of October 2011.
- Actual accumulation of imbalance for the wind fleet in the BPA Balancing Authority for October 2011 was 5,854 MWh.
- Slides 9 and 10 show wind plants that are consistently under- or over-scheduling.



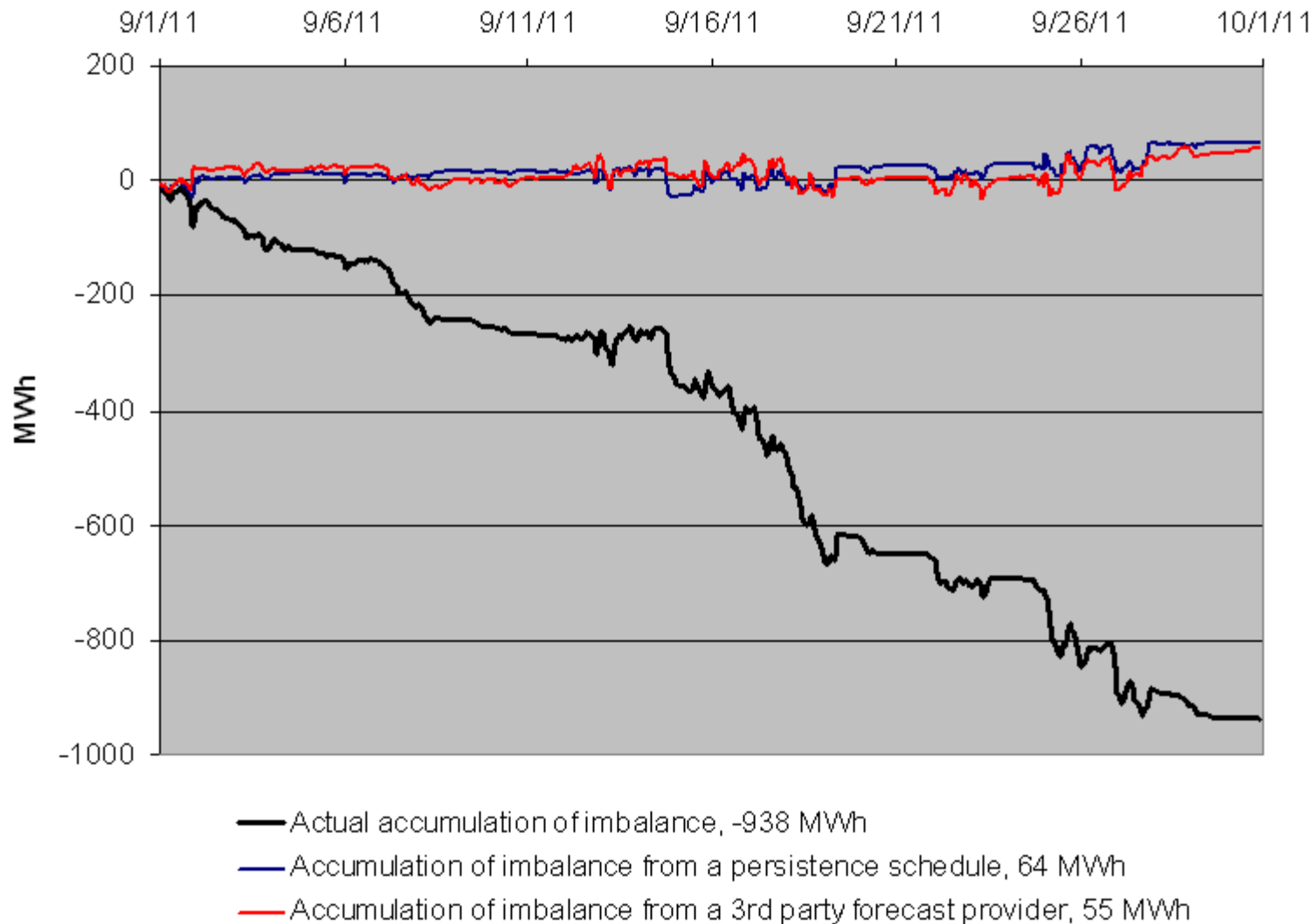
Generation Imbalance Accumulations



- Actual accumulation of imbalance, 1,346 MWh
- Accumulation of imbalance from a persistence schedule, -124 MWh
- Accumulation of imbalance from a 3rd party forecast provider, -35 MWh



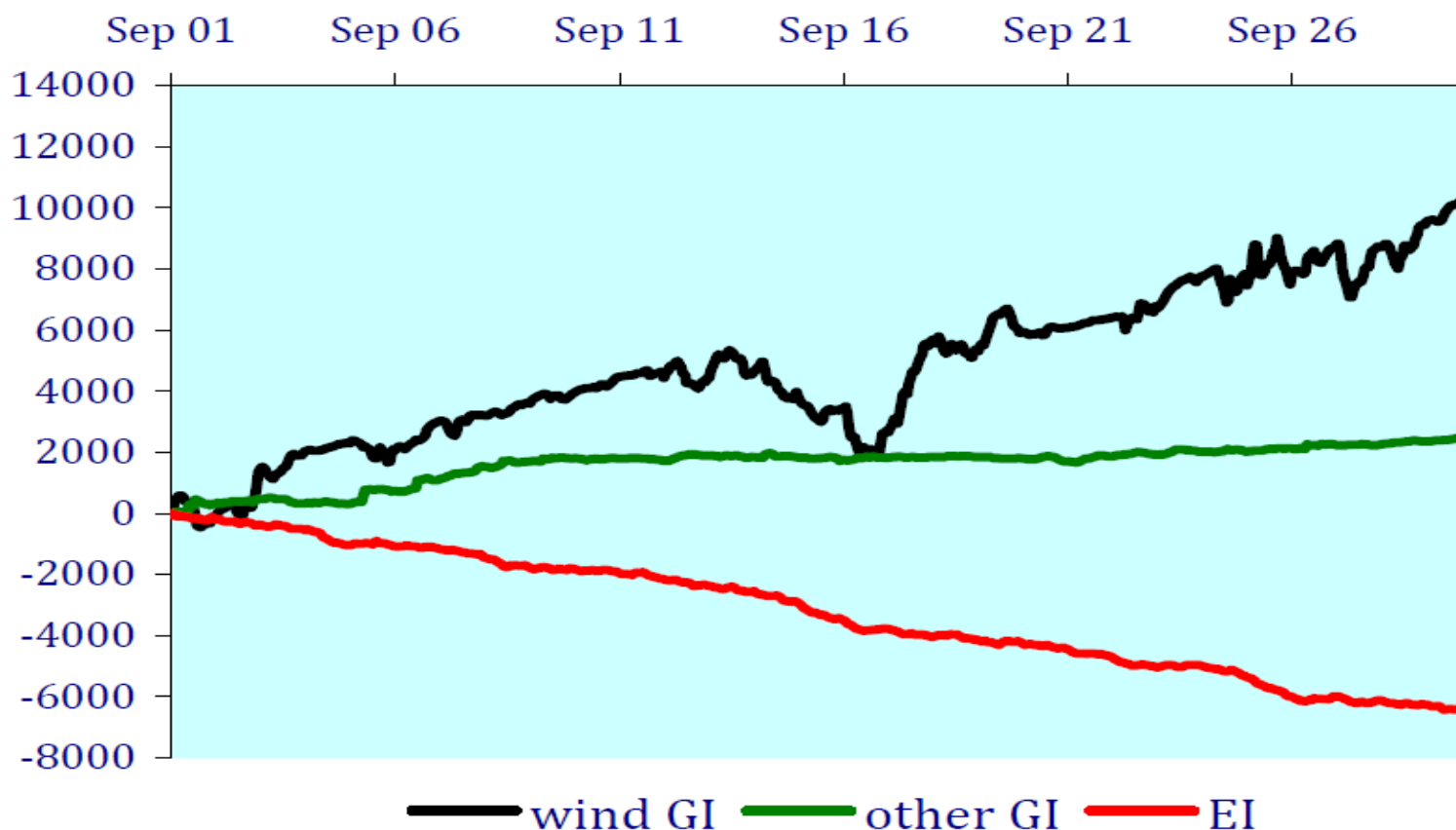
Generation Imbalance Accumulations



BPA Imbalance Activity Report

September 2011

MWh of accumulated imbalance

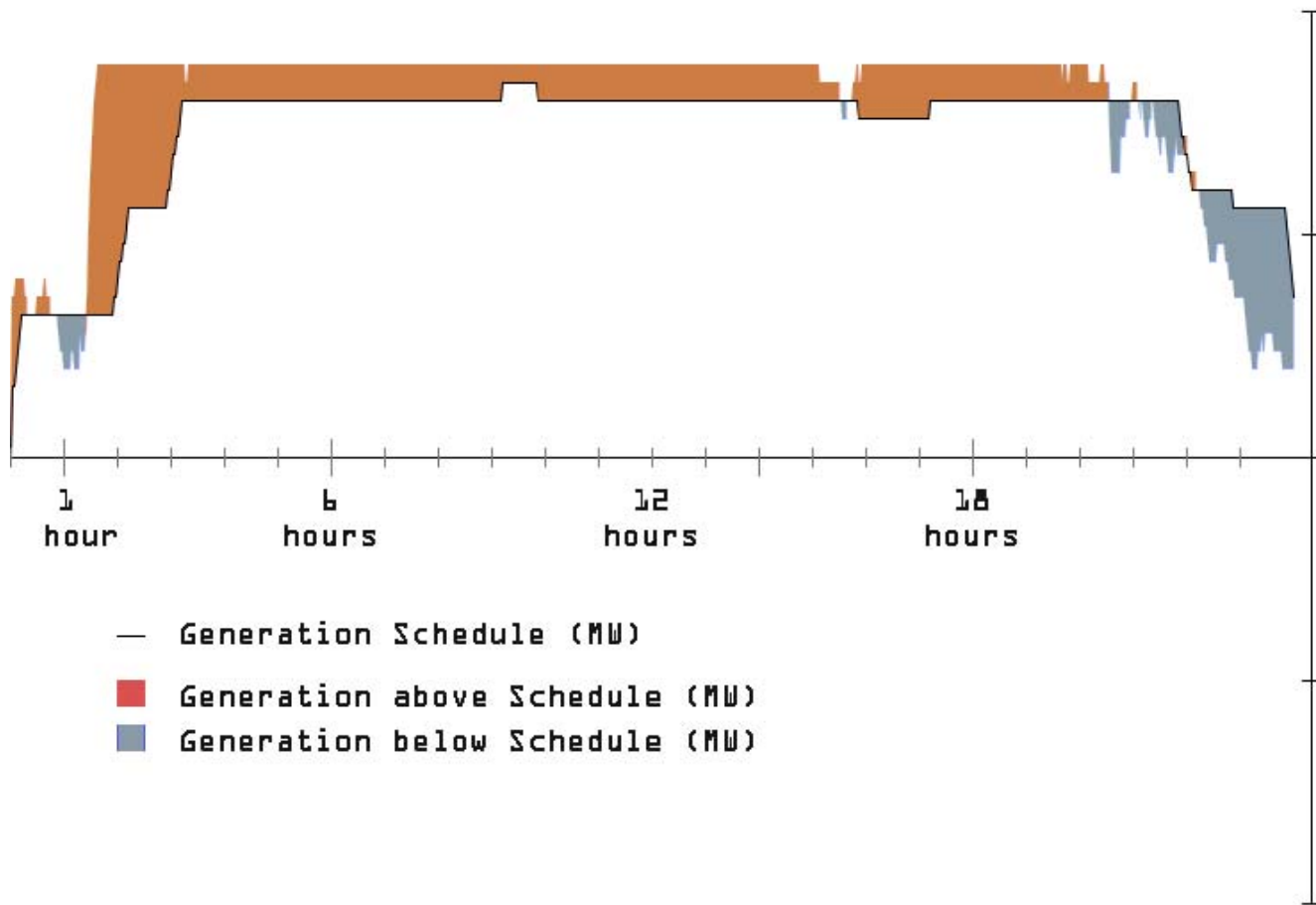


Generation Imbalance Patterns

- Sometimes, significant accumulations of imbalance occur during times when wind generation is either flat, near capacity, or near zero.
- The following three slides illustrate longer periods of schedule inaccuracy. The first two slides are wind plants and the third one is a load schedule that resulted in a persistent deviation.



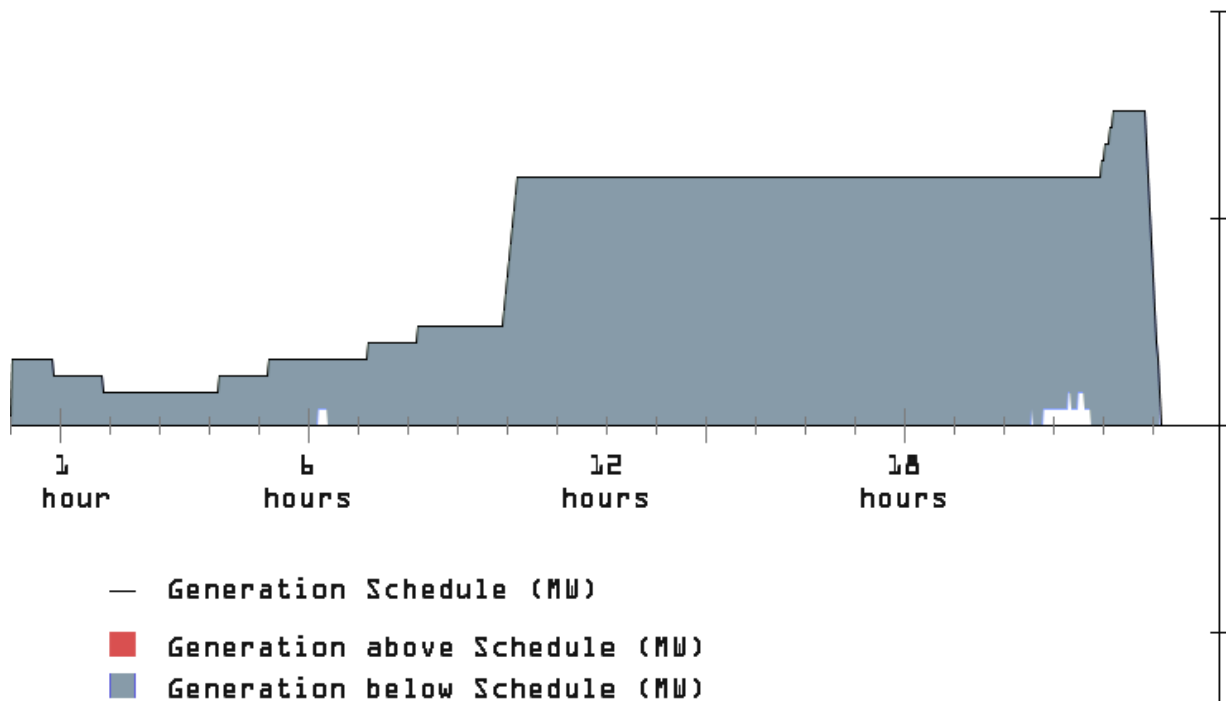
Wind Plant 1 - Generation Imbalance Patterns



Project persistently schedules below actual generation for the duration of the wind generating event.



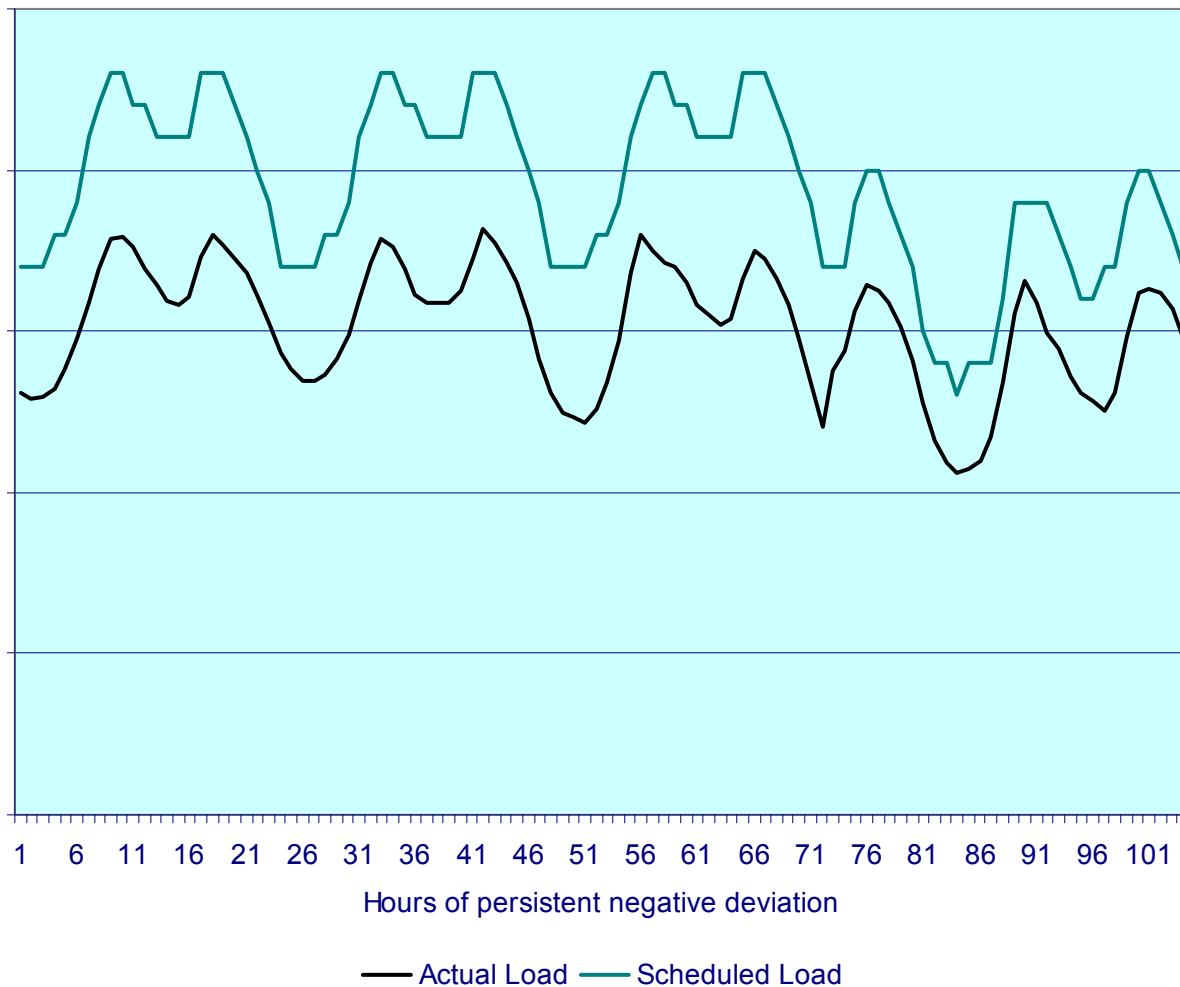
Wind Plant 2 - Generation Imbalance Patterns



Project persistently submits a schedule when project was not generating.



Load - Energy Imbalance Patterns



Initiatives to Address Generation Imbalance Accumulation

- BPA Initiatives to address cumulative imbalances
 - Intra-Hour Scheduling
 - Business Practice Update
 - Committed Intra-Hour Scheduling Pilot

- Generation Imbalance Information Available on BPA Web Site
 - Generation and Energy Imbalance Reports:
 - <http://transmission.bpa.gov/business/ancillary/>

 - WIND GENERATION & Total Load in The BPA Balancing Authority:
 - <http://transmission.bpa.gov/Business/Operations/Wind/>

 - #2 - Shows the rolling 7 days base point (schedule) versus actual wind generation
 - #5 - Shows historical data on Excel spreadsheet the imbalances (wind is included)
 - #10 - Is the rolling 7 days balancing reserves deployed
 - #11 - Is the historical balancing reserves deployed



Discussion Outline

- Historical data.
- Initiatives to address imbalance accumulations and patterns.
- Other suggestions to manage generation imbalance?
- Identify additional ways that generators can operate to prevent or mitigate cumulative imbalances and patterns of under-delivery or over-use of energy.



Written Comments and Responses

- Interested parties may submit written comments regarding ways that generators can operate to prevent or mitigate cumulative imbalances and patterns of under-delivery or over-use of energy to BPA via the Tech Forum.
 - techforum@bpa.gov
 - Please state “Managing Imbalances” in the subject line.
 - Submit comments by February 2, 2012.

- BPA will respond to written comments.
 - Comments and responses will be posted to BPA Web site by February 17, 2012.
 - BPA Rates Web site, Pre-BP-14 Rate Proceeding Customer Comments:
 - <http://www.bpa.gov/corporate/ratecase/bp14.cfm>

