BP-14 Generation Inputs Workshop

June 13, 2012

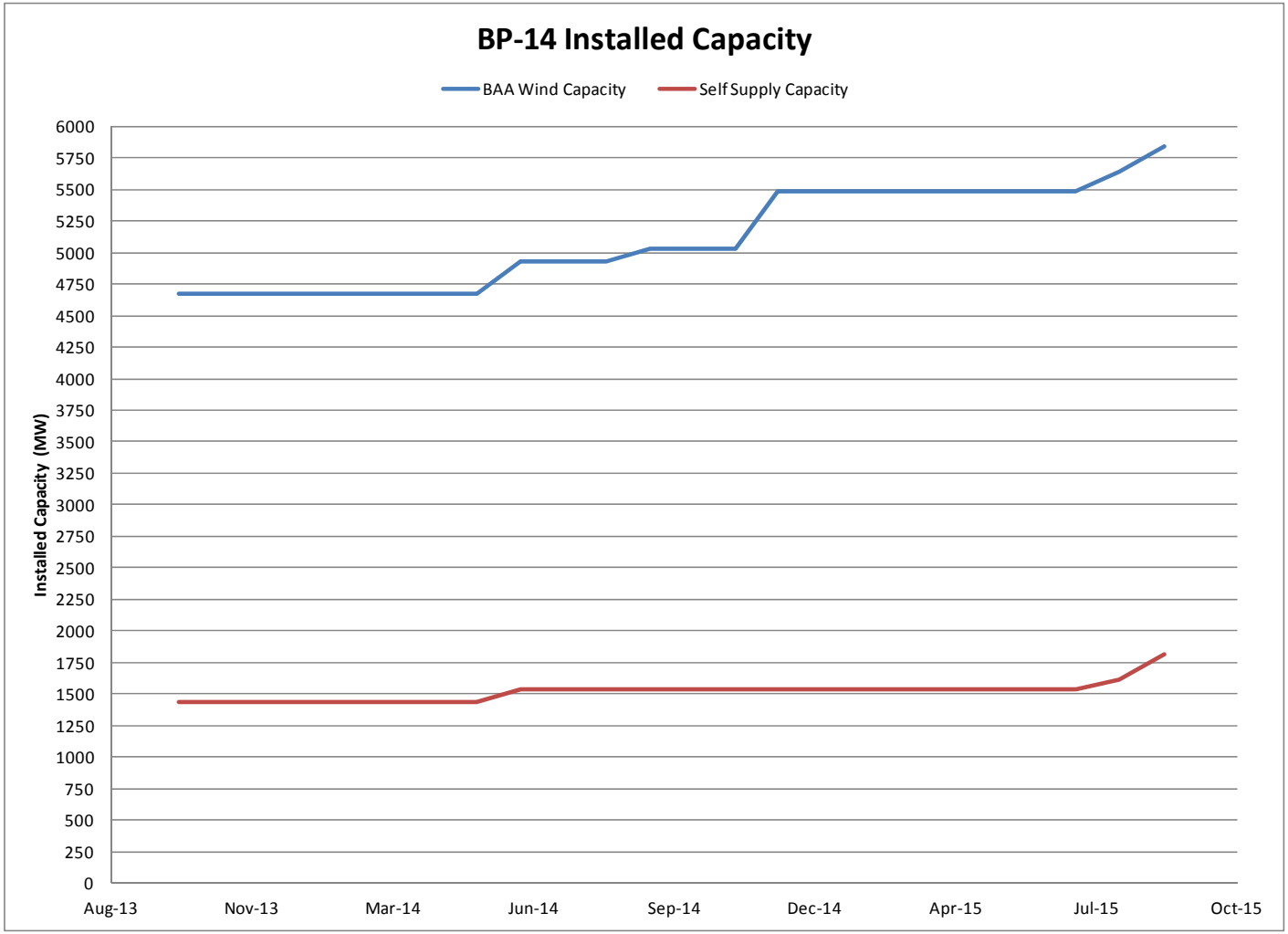
Agenda

Introduction

- This is the fifth generation inputs workshop of the BP-14 Rate Case. More workshops are scheduled through July 2012.
- Workshops will be posted on the BPA agency calendar. Tech Forum notices will inform you of the dates and provide the link to workshop materials.
- These workshops are discussions between BPA and customers and stakeholders prior to BPA crafting an Initial Proposal.

Balancing Reserve Capacity Quantity Forecast

Installed Capacity Forecast



Installed Capacity Forecasts

Preliminary Forecasts of Installed Wind Capacity for FY 2014-2015

Forecast	BP-12 FY 2013-2013 *	BP-14 FY 2014-2015 Gen Inputs Workshop 28 March 2012 **	BP-14 FY 2014-2015 Initial Proposal 8 June 2012 ***
Installed Wind Capacity - Beginning of Rate Period (MW)	3,792	4,770	4,670
Installed Wind Capacity - End of Rate Period (MW)	5,525	5,938	5,838
Installed Wind Capacity - Annual Average Over Rate Period (MW)	4,693	5,208	5,108

* BP-12 values are based on the rate case final study

** BP-14 values are based on the March 2012 preliminary forecast.

*** BP-14 values are based on the March 2012 preliminary forecast with a 100 MW wind plant adjustment.

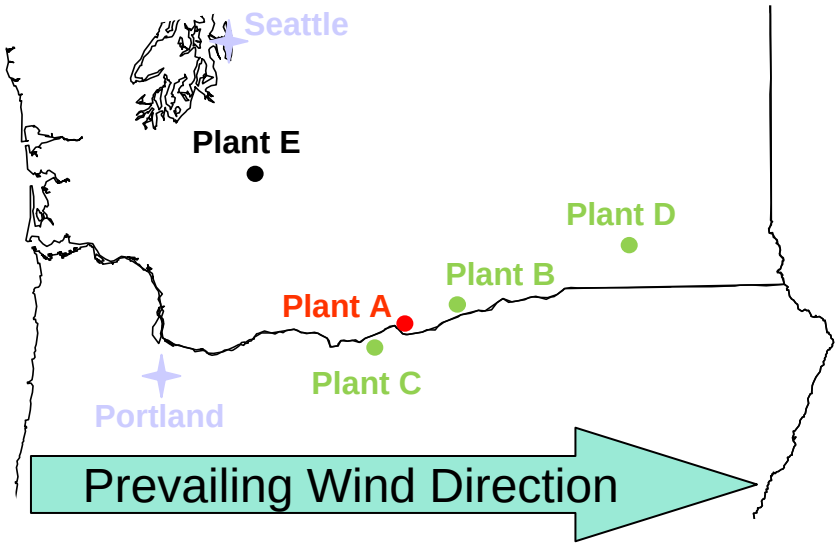
BP-14 Balancing Reserve Calculations

- Same calculations used in BP-12 Rates.
- Increased from 2 to 4 full years of 1-minute historic data (FY 2008 to FY 2011).
- Improved the wind scaling methodology to use multiple reference plants to fill in all data gaps.
- Included real solar generation data from Puget Sound Energy (PSE) or Sacramento Municipal Utility District (SMUD).

BP-14 Balancing Reserve Assumptions

- 99.5% Percentile Distribution
  - 0.25% Percentile defines *dec* amount
  - 99.75% Percentile defines *inc* amount
- Reserves for Hydro Generation and Federal Thermal Generation are included in the Load Balancing Reserves.
- 5 wind scheduling assumptions studied:
  - 30/30: 30-min persistence on 30-min schedules
  - 30/60: 30-min persistence on 60-min schedules
  - 45/60: 45-min persistence on 60-min schedules
  - 60/60: 60-min persistence on 60-min schedules
  - Actual Schedules with 30-min persistence on 60-min schedules used to fill in gaps

BP-14 Wind Scaling Methodology Example



- If a planned 100 MW wind farm (A) had a 20-minute lead before an existing 200 MW wind farm (B), a 10-minute lag after an existing 50 MW wind farm (C) and a 60-minute lead before an existing 400 MW wind farm (D) **and** B, C and D were equally indicative of the output of A, A would have the following estimated generation for any minute:

A = (100/200)*(B+20min)*0.33+(100/50)*(C-10min)*0.33+(100/400)*(D+60min)*0.33

BP-14 Wind Scaling Methodology

- Correlations and Time Lags calculated from:
  - Actual 1-min Generation Data for Existing Plants (online greater than 6 months)
  - Numerical Weather Model Data for CY2004-2006 used for New Plants.
- BP-12 method used top 3 correlated plants.
- BP-14 method uses correlation, time lags and distance matrices for all plants
- Trios used through ranking of cumulative
  - correlations (multiplied),
  - then distance (summed) and
  - then time lags (summed).

BP-14 Wind Scaling Methodology

Correlations

PLANT	A	B	C	D	E	…
A	1	0.93561	0.77437	0.68587	0.85745	…
B	0.93561	1	0.77473	0.71213	0.89668	…
C	0.77437	0.77473	1	0.66979	0.77743	…
D	0.68587	0.71213	0.66979	1	0.64607	…
E	0.85745	0.89668	0.77743	0.64607	1	
…	…	…	…	…	…	…

Distance (Miles)

PLANT	A	B	C	D	E	…
A	0	10	280	500	54	…
B	10	0	340	470	42	…
C	280	340	0	72	250	…
D	500	470	72	0	340	…
E	54	42	250	340	0	
…	…	…	…	…		…

Time Lag (Minutes)

PLANT	A	B	C	D	E	…
A	0	6	144	269	27	…
B	-6	0	169	235	21	…
C	-144	-169	0	-36	-125	…
D	-269	-235	36	0	-168	…
E	-27	-21	125	168	0	
…	…	…	…	…		…

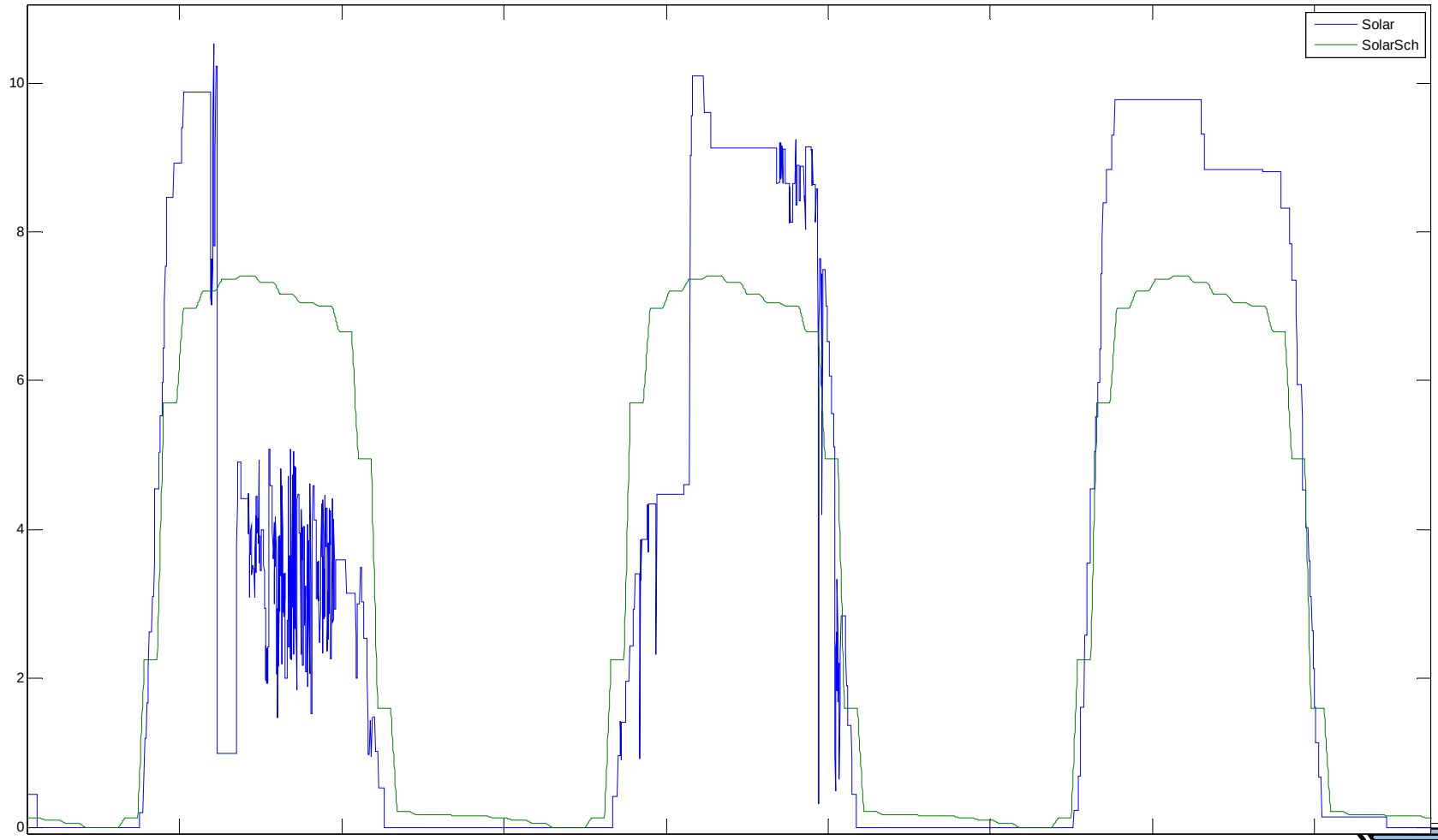
- For example, sample matrices to the left would result in Plant A using
  - a first trio of B, E and C
  - a second trio of B, E, and D
  - etc…
- Distance (and then Time Lags) are used to rank Trios with equal Correlations.
- All trios are tried until all missing data is filled.

BP-14 Balancing Reserve
Solar Generation

Solar – 15 MW Forecast in Christmas Valley, OR

- Data from PSE Wildhorse Solar
  - 0.5 MW Solar Facility; scaled to 15 MW.
  - Located near Ellensburg, WA
  - Resulted in ~0.29 MW *inc/dec* Reserves
  - Data for 3 years (FY 2009 to FY 2011)
- Data from SMUD Rancho Seco Solar
  - 1.655 MW Solar Facility; scaled to 15 MW.
  - Located near Sacramento, CA
  - Resulted in ~0.35 MW *inc/dec* Reserves
  - Data for 4 years (FY 2008 to FY 2011)
- Schedules assumed as hour of day average by month
  - i.e. average generation for all Hour Ending (HE) 12 minutes for every day in January for all 4 years was assumed as schedule for HE12 during January in the study.

BP-14 Balancing Reserves
Solar Generation



BP-14 Balancing Reserve Non-Federal Thermal Generation

- Results include a reduction for improved performance of the Non-Federal Thermal generation, as done in the BP-12 Final Proposal.
  - Improvement from FY 2010 to FY 2011 used.

	INC	DEC
FY08	341	-232
FY09	325	-253
FY10	315	-294
FY11	291	-279
Improvement FY10 to FY11	7.8%	5.1%

BP-14 Rate Period Averages of Balancing Reserves without Self Supply

99.5% Reserves BPA-14 Averages No Self Supply		Installed Capacity					TOTAL		LOAD*		NON-FEDERAL THERMAL***		SOLAR		WIND	
		WIND		SOLAR	HYDRO	THERMAL***	TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
Wind Persistence	Schedule Interval	TOTAL	Self Supply				INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC
BP12 30 min	BP12 60 min	4693	1393	21	2604	5784	941	-1245	271	-309	51	-80	0.45	-0.46	619	-855
30 min	30 min	5108	1520	15	2558	5837	828	-997	295	-333	60	-73	0.34	-0.35	473	-591
30 min	60 min	5108	1520	15	2558	5837	1008	-1222	308	-346	63	-75	0.34	-0.34	637	-800
45 min	60 min	5108	1520	15	2558	5837	1141	-1433	308	-349	62	-75	0.34	-0.35	771	-1008
60 min	60 min	5108	1520	15	2558	5837	1252	-1635	305	-351	60	-74	0.34	-0.35	886	-1210
Actual **	60 min	5108	1520	15	2558	5837	1005	-1237	306	-347	62	-76	0.34	-0.35	636	-814

NOTES:

* Load includes all Non-AGC-Controlled Hydro and CGS

** Actual Wind schedules missing or nonexistant (new plants) are filled with 30 minute / 60 minute .

*** Thermal includes new Thermal and Biomass as an allocated amount by nameplate capacity

BP-14 Rate Period Averages of Balancing Reserves with Self Supply

99.5% Reserves BPA-14 Averages with Self Supply		Installed Capacity					TOTAL		WIND		SELF SUPPLY WIND GI****	
		WIND		SOLAR	HYDRO	THERMAL***	TOTAL		TOTAL			
Wind Persistence	Schedule Interval	TOTAL	Self Supply				INC	DEC	INC	DEC	INC	DEC
BP12 30 min	BP12 60 min	4693	1393	21	2604	5784	791	-1012	469	-622	150	-233
30 min	30 min	5108	1520	15	2558	5837	744	-874	389	-468	84	-123
30 min	60 min	5108	1520	15	2558	5837	867	-1027	496	-605	141	-195
45 min	60 min	5108	1520	15	2558	5837	953	-1165	583	-739	188	-269
60 min	60 min	5108	1520	15	2558	5837	1022	-1295	657	-870	230	-341
Actual **	60 min	5108	1520	15	2558	5837	865	-1037	495	-614	141	-200

NOTES:

** Actual Wind schedules missing or nonexistant (new plants) are filled with 30 minute / 60 minute .

**** Self Supply Wind GI is the amount that Wind GI, Wind Total, Total GI and Total Total Balancing Reserves would be reduced if Iberdrola Self Supplies GI during the BPA-14 Rate Case

BP-14 Rate Period Averages of Balancing Reserves as a Percent of Nameplate without Self Supply

99.5% Reserves BPA-14 Averages No Self Supply		Installed Capacity				NON-FEDERAL THERMAL		SOLAR		WIND	
		WIND		SOLAR	THERMAL	TOTAL		TOTAL		TOTAL	
Wind	Schedule Interval	TOTAL	Self Supply			INC	DEC	INC	DEC	INC	DEC
BP12 30 min	BP12 60 min	4693	1393	21	5784	0.9%	-1.4%	2.1%	-2.2%	13.2%	-18.2%
30 min	30 min	5108	1520	15	5837	1.0%	-1.2%	2.3%	-2.3%	9.3%	-11.6%
30 min	60 min	5108	1520	15	5837	1.1%	-1.3%	2.3%	-2.3%	12.5%	-15.7%
45 min	60 min	5108	1520	15	5837	1.1%	-1.3%	2.3%	-2.3%	15.1%	-19.7%
60 min	60 min	5108	1520	15	5837	1.0%	-1.3%	2.3%	-2.3%	17.3%	-23.7%
Actual **	60 min	5108	1520	15	5837	1.1%	-1.3%	2.3%	-2.3%	12.5%	-15.9%

NOTES:

** Actual Wind schedules missing or nonexistant (new plants) are filled with 30 minute / 60 minute .

BP-14 Rate Period Averages of Balancing Reserve4s as of a Percent of Nameplate with Self Supply

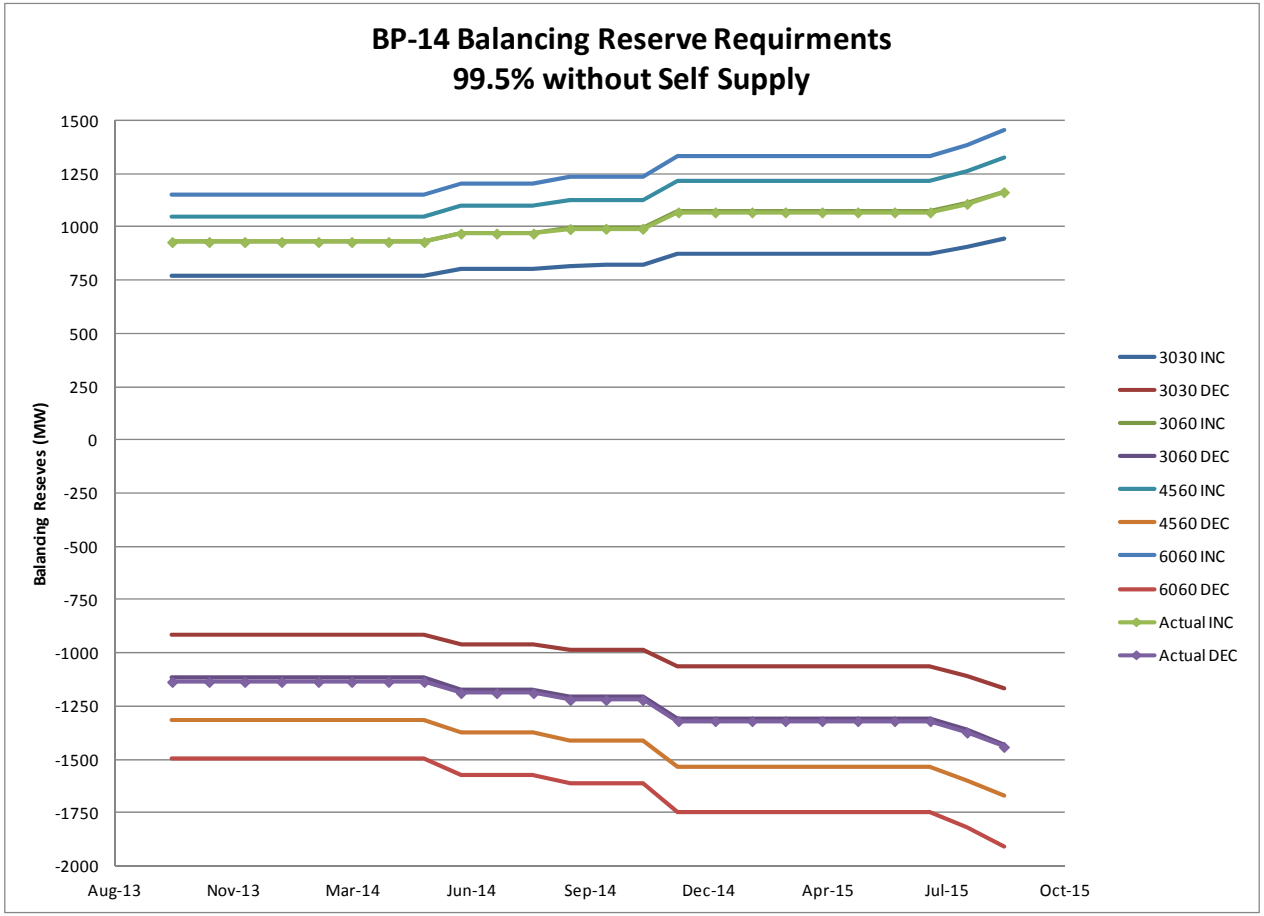
99.5% Reserves BPA-14 Averages with Self Supply		Installed Capacity				WIND		SELF SUPPLY	
		WIND		SOLAR	THERMAL	TOTAL		WIND GI****	
Wind	Schedule Interval	TOTAL	Self Supply			INC	DEC	INC	DEC
BP12 30 min	BP12 60 min	4693	1393	21	5784	10.0%	-13.3%	10.8%	-16.8%
30 min	30 min	5108	1520	15	5837	7.6%	-9.2%	5.5%	-8.1%
30 min	60 min	5108	1520	15	5837	9.7%	-11.8%	9.3%	-12.8%
45 min	60 min	5108	1520	15	5837	11.4%	-14.5%	12.4%	-17.7%
60 min	60 min	5108	1520	15	5837	12.9%	-17.0%	15.1%	-22.4%
Actual **	60 min	5108	1520	15	5837	9.7%	-12.0%	9.3%	-13.2%

NOTES:

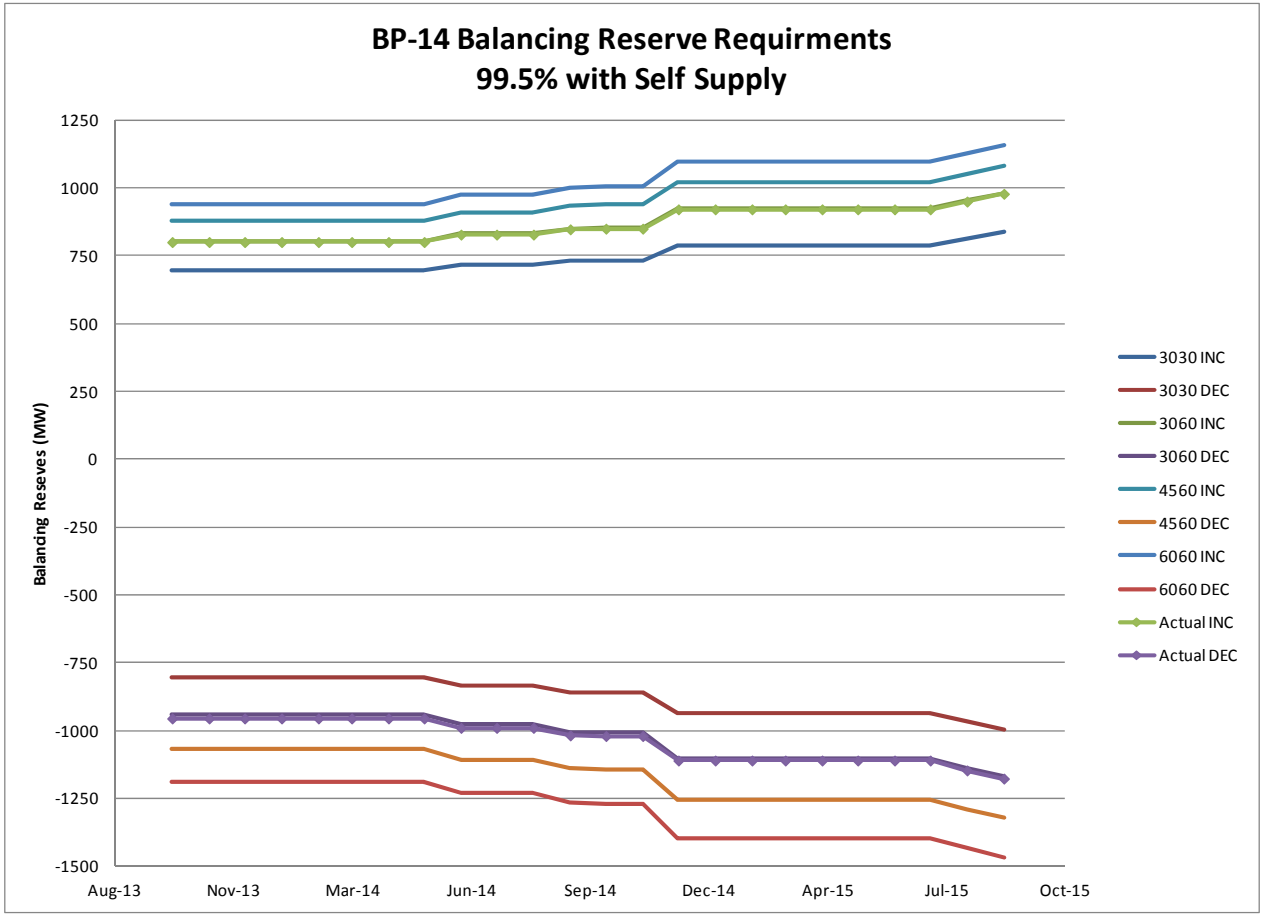
** Actual Wind schedules missing or nonexistant (new plants) are filled with 30 minute / 60 minute .

**** Self Supply Wind GI is the amount that Wind GI, Wind Total, Total GI and Total Total Balancing Reserves would be reduced if Iberdrola Self Supplies GI during the BPA-14 Rate Case

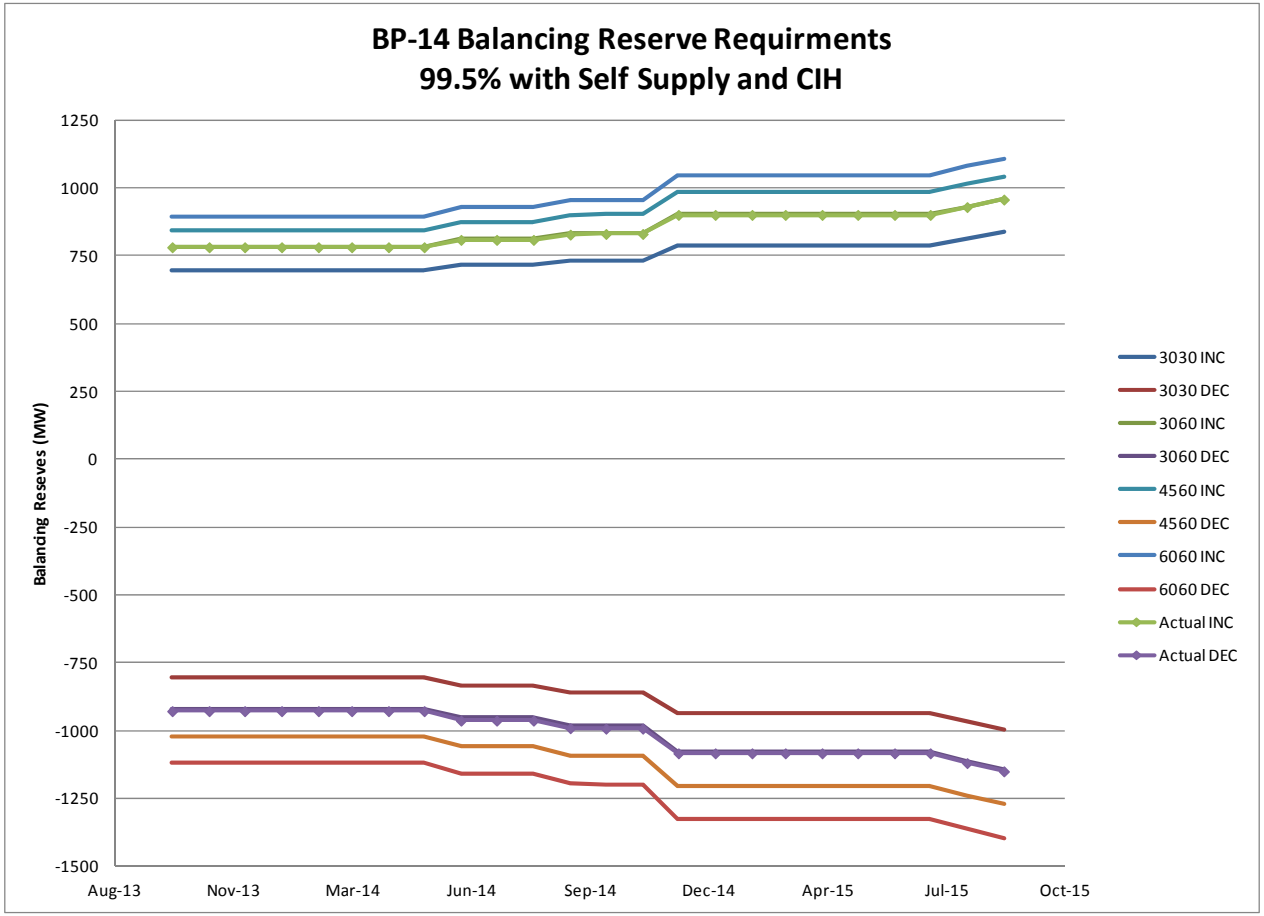
BP-14 Monthly Total Balancing Reserve Forecast without Self Supply



BP-14 Monthly Total Balancing Reserve Forecast with Self Supply



BP-14 Monthly Total Balancing Reserve Forecast with Self Supply and 571MW of Committed Intra-Hour Scheduling



Acquisition of Generation Inputs

Context for Acquisitions of Non-Federal Generation Inputs

- BPA had expected total balancing reserve needs to meet a 99.5% level of service to exceed the capability of the Federal Columbia River Power System (FCRPS) during the FY 2014-2015 rate period.
- Slowing constructing of wind plants in the Pacific Northwest due to national and regional political issues and increased diversity among the wind fleet may defer the need for acquisition until late in the rate period or next rate period.
- Once BPA forecasts its balancing reserve needs to exceed the FCRPS capability, BPA will attempt to purchase non-Federal generation inputs to provide balancing reserves at the 99.5% level of service.
- These slides raise some of the issues on quantity, method, timing, and risks created by those acquisitions.

Determining the Quantity of Acquisitions For Base Level of Service

Quantity of Balancing Reserves Purchased to Meet 99.5% Level of Service

- Determination of an initial amount of reserves needed will be made during the rate case after commitments for Committed Intra-Hour, Self-Supply, and potential Rate Design Options. When the amount needed to meet a 99.5% level of service exceeds the forecasted limit for providing reserves from FCRPS, BPA will need to plan to make an acquisition.
- The quantity purchased will vary depending on the term of the purchase and variations in use of balancing reserves allowed during the purchase period.

Quantity Issues for Acquisitions For Base Level of Service

Issue: How will amounts of required balancing reserves vary during the rate period?

- Variations in amounts occur due to new plants coming on line.
- Variations in amounts occur if changes in participation are allowed in Committed Intra-Hour Scheduling Service or similar programs during the rate period.
- Variations in amounts occur if plants leave the BPA Balancing Authority during the rate period through dynamic scheduling,
- Others

Issue: Will changes in required amounts of balancing reserves require notice to avoid unnecessary acquisitions?

Issue: Should BPA adjust forecasted on-line dates of new wind plants outside the rate case process to reflect the latest information on expected on-line dates?

Determining the Timing for Acquisitions For Base Level of Service

Timing the Purchase of Non-Federal Balancing Reserves

- BPA expects to wait to get commitments from parties to services that reduce the needed amount of balancing reserves prior to start of rate period.
- Once BPA understands the commitments, BPA must determine the term of the purchases and how to incorporate information that varies the quantity needed.
- BPA must develop systems for integrating purchases of non-Federal resources into Automatic Generation Control.
  - BPA's current expectation is that systems for integrating purchases will be developed allowing acquisitions to be incorporated in a much shorter timeframe and that systems should not be a limiting issue.

Timing Issues for Acquisitions For Base Level of Service

- Issue: How long a purchase does BPA make for base amounts?
  - Rate period, annual, semi-annual, quarterly, monthly?
  - BPA expects purchase methods to be repeated on a regular cycle if not made for a rate period basis.

What Method Should BPA Use for Making Purchases of Non-Federal Balancing Reserves?

- BPA expects to use a request for offers on a periodic basis to solicit interest from providers of non-Federal generation inputs.
- Are there other methods BPA should consider using?

How Should BPA Address Acquisition Risk?

- How should BPA address an inability to acquire non-Federal resources to meet the forecasted need to supply the base level of service?
- If BPA is unable to acquire its forecasted need for the base amount of balancing reserves as planned offer, should BPA buy any reserves made available at any price?
- If BPA is unable to buy its forecasted need for balancing reserves to meet the base level of service, how should BPA allocate the insufficiency?

Dynamic Balancing Reserve Adjustment

Dynamic Balancing Reserve Adjustment

BPA has been asked to consider:

- Whether balancing reserves can be reduced to save costs when wind generation is forecasted to be low.
- Whether the need for additional balancing reserve can be predicted to allow short-term acquisition of additional capacity to reduce Dispatcher Standing Order (DSO) 216 risk.

  A key issue affecting this analysis is that wind generators do not currently schedule to a forecast that is visible to BPA, and they appear to determine their schedules at various time frames ahead of the delivery hour.

  This analysis focuses on the difference between a centralized wind forecast and actual generation, not on the difference between scheduled and actual generation. It implicitly assumes that wind is scheduled to the forecast.

Topics

1. Wind forecast accuracy/potential reserve quantity reductions
2. Potential costs or savings for customers
3. Risks to BPA Operations
4. Alternate approaches to reserve quantity reduction and cost savings

1. Wind Forecast Accuracy/Potential Reserve Quantity Reductions

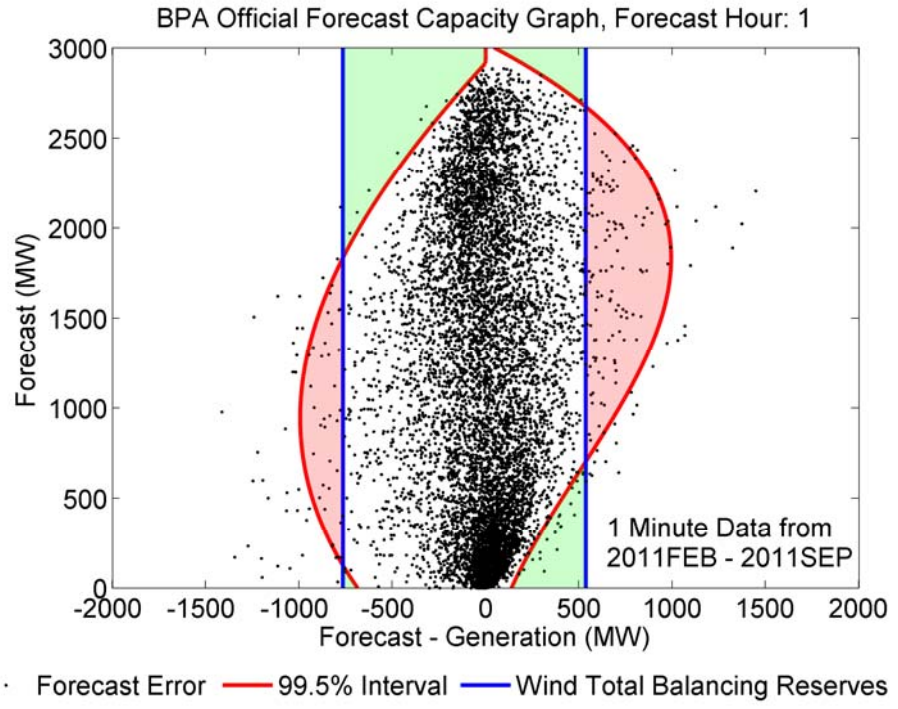
a) Wind Power Forecast Accuracy study (short time intervals, not including reserves for load).

b) Assess forecast time frame that allows for marketing and operations planning.

c) Assess frequency/duration of high and low wind generation periods.

a) Wind Power Forecast Accuracy Study

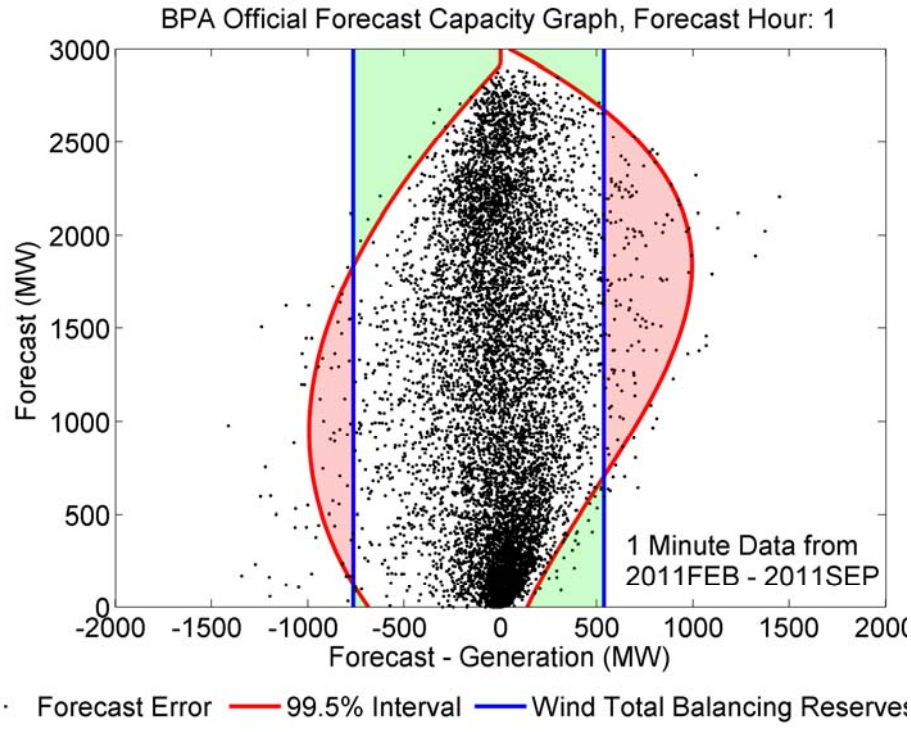
- Blue line – wind only balancing reserve quantity based on 30/60 persistent schedule as established in the Rate Case
  - Does not include the pooling benefit from Load
- Red line – 99.5% confidence interval around the distribution of forecast error
- Green shaded areas identify potential periods of wind balancing reserve reduction. Dots within the green area represent frequency of events.
- Red shaded areas are potential reserve increases.
- Negative values represent *dec* reserves, positive values represent *inc* reserves, assuming forecast = schedule.

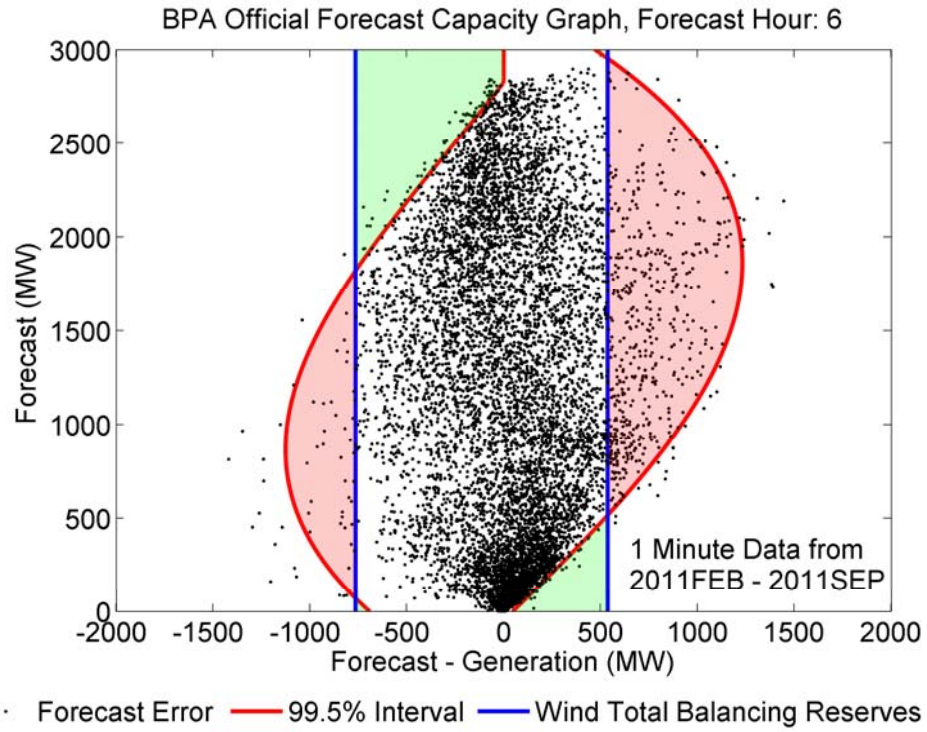


b) Time Frame Required for Marketing/Operations Planning

- If balancing reserves are reduced, BPA would need to remarket the capacity in real-time to recover costs from the customer credit.
- If balancing reserves are increased, BPA must purchase additional non-Federal capacity.
- Use of the one-hour ahead forecasts does not allow sufficient marketing and operations planning time.
  - The next hour forecast posts at xx:20.
    - 20 minutes before the close of the scheduling window
  - Marketing time requirement is not constant through the day/year.
    - Longer time may be required at night than during the day or at times when liquidity is limited.
  - Not enough time to re-plan hydrology.
  - Not enough time to purchase or sell capacity.

Six-Hour Forecast

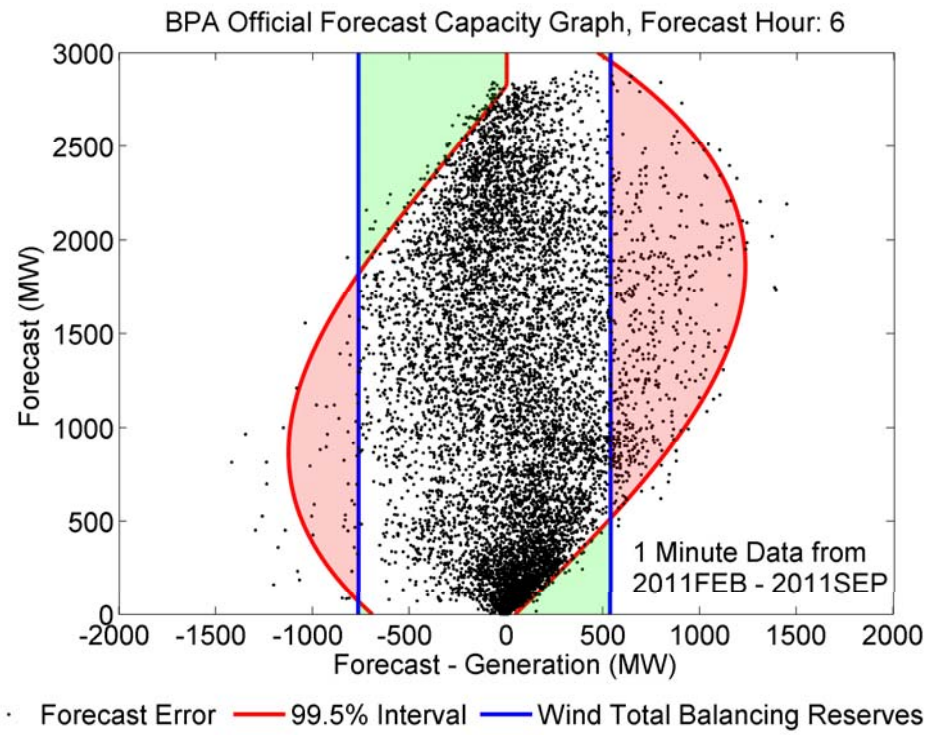




Six-Hour Forecast

- BPA studied the six-hour time as the absolute minimum possible time for repositioning. It is likely more time would be needed.
- Six hours might give time to remarket some (small) portion of balancing reserve capacity, acquire small amounts of additional reserve capacity and/or re-plan hydrology for a portion of the reserves.
- The six-hour forecast identifies more reserve additions than the one-hour forecast and increases uncertainty about accuracy (red areas).
- More decision error would be expected from using the six-hour forecast – if BPA reduced reserves, DSO 216 risk would increase. If BPA increased reserves, DSO 216 risk would decrease, costs would increase but there is high likelihood the extra capacity would not be needed.

c) Frequency/Duration of High Wind Generation Period



- There are two components affecting a potential reserve adjustment
  - The quantity or area between the blue line and the red line (green and red areas).
  - The frequency and duration of forecasts being in the shaded areas (dots within the areas, difference between six-hour and one-hour graphs)

Summary: Reserve Reduction Quantity

- All participating wind generators would have to schedule to a centralized forecast.
- Potential quantity of reserve reduction varies depending on forecast time horizon.
- Potential reserve reduction is associated with high wind times (*dec* savings, upper left green area) or low wind times (*inc* savings, lower right green area), which occur only part of the time.
- Averaging savings over time and assuming six hours to allow for hydro operations planning and marketing yields potential *inc* reserve reduction of 17% and potential *dec* reduction of reserve reduction of 11%.
  - This does not translate to a cost reduction of 17% or 11%.
  - DSO 216 risk would increase.

Summary: Reserve Increase Quantity

- All participating wind generators would have to schedule to the centralized forecast.
- Purchasing additional reserves based on six-hour forecast will lead to many false positive decisions (difference in frequency of dots in red areas between one-hour and six-hour graphs), and will increase costs.
- Purchasing additional reserve would reduce DSO 216 risk.
- If BPA increased reserves based on the 6 hour forecast, it would add an average of about 8% in *dec* reserve and about 46% in *inc* reserve (amounts would be higher but for short periods of time. These changes are significantly different amounts than the rate case study methodology because of the false positives associated with the 6 hour forecast.

Potential Costs or Savings for Customers - Cost Methodology

- Two cost cases were evaluated.
  - One case assumed the current level of balancing reserves as a maximum, but reduced reserves a portion of the time based on the six hour forecast.
  - The second case assumed that BPA would react in either direction -- increase or decrease available balancing reserve based on the six hour wind forecast.

Cost Analysis: Reserve Reduction

- Although there is potential for cost savings (green areas), the likelihood of schedule error falling into those areas (dots within the area) is low.
- Higher frequency cost saving events exist but the magnitude of the savings is small.
- Also, a risk premium associated with attempting to recover reserve costs via Real-Time marketing must be considered. This cost is driven by price volatility and correlation.

Marketing Basics

- To meet hydraulic objectives while maximizing the value of the Federal Columbia River Power System (FCRPS), energy transactions occur over several time frames:
  - Long Term: 20-year contracts.
  - Mid Term: within fiscal year.
  - Short Term: within month and Real-Time.
- The goal is to avoid forced marketing in Real-Time. Forced marketing puts both hydraulic objectives and FCRPS value maximization at risk.

Reserves and FCRPS Planning

- Carrying reserves is incorporated into operations planning along with the resultant marketing actions.
- Opportunistically reducing reserves requires undoing in Real-Time months of Term marketing and system planning.
- Real-time transactions will not always be of a value greater than or equal to all forward transactions used to set up the system for carrying reserves. To prevent cost shifts to power customers, this risk must be assigned a price.

Risk Premium

- Forced marketing puts FCRPS value at risk; resulting in the need to recover the expected loss in FCRPS value.
  - Lack of time available to capitalize on favorable price spreads. Term trading opportunities are lost and forced into real-time.
  - Products may not be comparable – lack of capacity market means reselling energy products instead of capacity products.
  - Price volatility in real-time is greater than in the term markets.
  - Imperfect correlation between term market prices and real-time prices.
- Even if Term spreads were equal to real-time spreads on an expected basis, the risk of adverse price movements poses a cost shift risk to PF customers. In order to cover the risk, the extrinsic factors of price volatility and correlation must be accounted for and valued.
- This results in an expected risk premium of $3.25/MWh.
- An additional significant risk not quantified in this analysis is the market liquidity risk.

Costs of Reducing Reserves

- Studies show a net increase in the variable cost of balancing reserves from $600,000 to $3,500,000.
  - The $600,000 cost is the case where BPA only reduces reserves. It reflects the variable costs and risk premium associated with BPA's ability to recover the cost of repositioning to provide less *inc* and *dec* reserves.
  - The $3,500,000 cost is the case where BPA increases and decreases reserves. It reflects the variable costs and risk premium associated with BPA's ability to recover the cost of repositioning to provide more or less *inc* and *dec* reserves. It does not include embedded cost for *incs*.
- Embedded costs are not impacted by reducing reserves because these costs do not change with operations. Allocating embedded costs when increasing reserves needs further study.
- The net impact is an increase in the total cost of balancing ranging from 1% to 4% if BPA were to dynamically adjust FCRPS reserves.
- Costs of acquiring non-FCRPS reserves is a topic for the reserve acquisition discussion.

BPA Operational Risks and Other Issues

- Inventory analysis
  - Uncertainty in obligations for short term modeling and for setting up for load peaks and night time minimum operation
- Statutory obligations
  - Added complexity to hydro operations for meeting non-power objectives
- Reliability
  - Actual scheduling differs from forecasts
- Cost to implement
  - More FTE & IT systems to implement
- Risk of cost shift

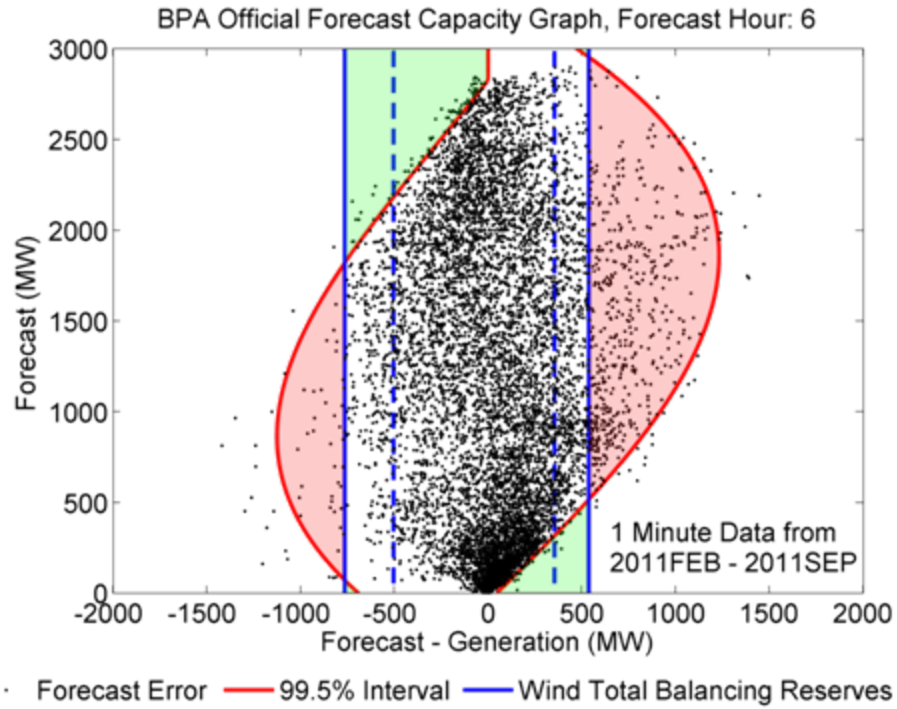
Conclusion on Short Term Reserve Adjustments

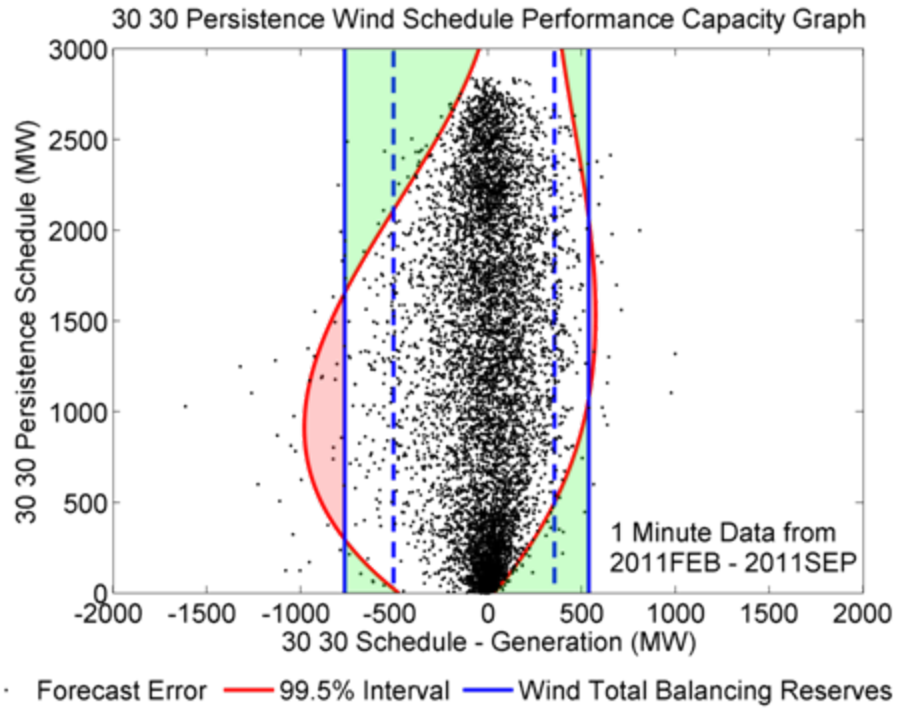
- BPA recommends against adjusting FCRPS reserves downward on a short term basis because
  - Costs increase, not decrease
  - Added complexity for hydro operations
- BPA recommends that customers wishing to time acquisition of additional reserve capacity based on forecasted wind generation make their own purchases using an enhanced supplemental service.
  - Non-FCRPS capacity may be better able to adjust on short notice.
  - Customers would retain control of their benefit/cost decision.

Side Note -- Committed Intra-Hour Scheduling Can Result in Reduced VERBS cost

- Currently 30/30 scheduling relies on persistence based scheduling.
- There is a possibility for further improvements in forecasted scheduling accuracy.
- Short term scheduling tied to centralized forecast (persistence based or better) yields greater and more reliable reduction in reserves.
- Currently cost reduction for Committed Intra-Hour Scheduling is based on the fleet level estimate of 34% reserve quantity reduction and cost savings.
- Reserves are reduced at all times, while maintaining same DSO 216 risk as base service.

Six-Hour Forecast vs. 30/30 Scheduling





Customer Choice in Scheduling Options

- The Variable Energy Resource Balancing Service (VERBS) charge based on customer choice of scheduling practice was a rate design option discussed at the 8 March 2012 Generation Inputs workshop.
- The Balancing Reserve Capacity Quantity Forecast assumptions for the Initial Proposal discussed at the 26 April 2012 Generation Inputs workshop said BPA would conduct studies at selected scheduling accuracies and scheduling periods to enable discussion of additional options for schedule accuracy and scheduling period elections by various wind generators.
- Wind plants scheduling to a centralized forecast was identified as an option to explore. At the 9 May 2012 Generation Inputs workshop a discussion point was scheduling to a centralized forecast at a 30-minute persistence scheduling accuracy in a 60-minute scheduling period.

Customer Choice in Scheduling Options

- BPA continues to expand and refine the centralized forecast for wind in the BPA Balancing Authority.
- BPA expects to be able to offer forecasts by wind plant for the FY 2014-2015 rate period.
- BPA is exploring offering an option where the wind plant would schedule to the forecast provided by BPA's centralized forecast.
- Wind plants scheduling to the centralized forecast decrease BPA's uncertainty and may be exempt from Persistent Deviation.
- BPA is exploring providing the forecasts at more than one scheduling period timeframe, for example, 30-minute scheduling period and 60-minute scheduling.

Request for Wind Generation Data

- BPA is requesting sub-hourly values for the total Potential Generation for all Wind Plants, who have or can calculate and archive such data, connected to the BPA system in the smallest time increment available (one minute average preferred) for the period of October 1, 2009, to Present. If data is unavailable for this entire time period, please provide whatever data you do have.

- For those that are able to provide data to BPA immediately, please provide it (MW) in digital format (via email or mail a CD/DVD) to BPA in one of the following formats: comma separated variable (*.csv), Excel (*.xls or *.xlsx), MatLab (*.mat) or text (*.txt).
  - Provide data to Frank Puyleart: frpuyleart@bpa.gov
- A Official Request Letter was sent out on April 16, 2012 through the Transmission Account Executives.
- Please fulfill this request ASAP for inclusion in the BP-14 Rate Case.
  - The letter required delivery by May 1, 2012; While a majority met this deadline, many still need to respond.
- Please contact Frank Puyleart at frpuyleart@bpa.gov with questions.

Customer Feedback or Discussion on Generation Inputs Issues

Next Steps

- Next Generation Inputs discussion workshops planned:
  - 27 June 2012, 1:00-4:00
    - Discussion on acquisition for supplemental service
    - Discussion on credit when balancing reserves are reduced due to hydro system limitations
  - 26 July 2012, 9:00-12:00
  - Tech Forum announcement will be sent to confirm dates and times.