

BP-18 Generation Inputs Workshop

Rates Hearing Room

7/22/2016



Since Last We Met

- BPA Staff has aligned around a proposed path for the BP-18 Initial Proposal. Aside from the three exceptions listed below, the path is one of limited change from the status quo.
 - BPA executives and external stakeholders appear aligned around not wanting an unnecessarily contentious BP-18 rate case.
 - BPA executives are concerned with implementation costs often associated with change.
- The three potential exceptions are:
 1. Embedded and variable cost methodology
 2. DERBS rate design
 3. Solar forecast, scheduling, and rate design
- Two new subteams were started to address the 1) embedded and variable cost methodology and 2) the DERBS rate design.

Key BP-18 Initial Proposal Assumptions

- Rates, both power and Balancing Capacity, set assuming that the Federal system can provide the forecast amount of capacity necessary to provide balancing service.
 - The financial risk of actual capacity source and cost being different from forecast would be included in BPA's risk assessment and business line risk tools.
- INC balancing reserve requirement set with a 99.7% planning standard.

Embedded Cost Subteam Takeaways

- New methods based on entire system worth further exploration.
- No commitments to support a new methodology until entire picture is known (e.g., bottom-line impact).
- Many believe that an entire system methodology that makes few exceptions on cost and credit inclusion would be easiest to support.
- Those with reservations about a few exceptions approach stated that a reasonable classification (classifying costs and credits to energy and capacity) could counterbalance those concerns.
- BPA staff proposal is to pursue gaining alignment on a entire system methodology.
 - If alignment proves elusive, move back to Big 10 methodology with potential debt action considerations.
 - If alignment develops, new methodology would be applied to all ACS-related capacity and would ideally be documented through the rate case with limited rate case involvement by agreeing parties.

Entire System Approach with BP-18 numbers

Preliminary BP-18 Federal System Critical Water Capability	
Energy/ ¹ (aMW)	7,228
1-Hour Critical Water Average Capability + Reserve Capacity (MW)	14,868
Energy Classification/ ² (%)	33%
Capacity Classification/ ² (%)	67%
Preliminary BP-18 Net Costs/ ³	\$ 2,151,982,649
Capacity Classification (\$)	\$ 1,448,017,056
Method 1	
Preliminary Embedded Cost of Federal INC Capacity (\$/kW/mo)	\$ 8.12
Method 2	
Preliminary Embedded Cost of Federal INC Capacity (\$/kW/mo)	\$ 8.12
Preliminary Variable Inc (\$/kW/month) ⁴	\$ 1.21
Preliminary Emb. and Var. Cost of Federal INC Capacity (\$/kW/mo)	\$ 9.33

¹ Includes PF (Tier 1 and Tier 2) and IP Sales

² Classification of energy and capacity set using Method A ("Max and Average") as discussed at the March 29th 2016 workshop.

³ Includes revenue credits and does not include conservation and rate discount costs (Irrigation Rate and Low Density Discounts)

⁴ Prices from the AURORA run for BPA reference case

Updated Big 10 and Variable

Preliminary BP-18 Big 10 Hydro Projects 120-Hour Average Water Capability	
120-Hour Average Water Average Capability + Reserve Capacity (MW)	11,484
Preliminary Big 10 Costs ^{/1}	\$ 1,006,504,000
Preliminary Embedded Cost of Federal INC Capacity (\$/kW/month)	\$ 7.30
Preliminary Variable INC (\$/kW/month) ^{/2}	\$ 1.21
Preliminary Cost of Big 10 INC Capacity (\$/kW/month)	\$ 8.51
Preliminary Variable DEC (\$/kW/month) ^{/2}	\$ 0.77

^{/1} Costs from initial Integrated Program Review

^{/1} Does not include a debt refinancing adjustment

^{/2} Prices from the AURORA run for BPA reference case

^{/2} Costs calculated on the price spread between superpeak and graveyard.

Rate Impact Applying Preliminary Forecast Capacity Cost

VERBS	BP-18 Estimate				
	BP-16 Rates	Status Quo Method		Entire System Method 1	
		\$/kW/month	% Change	\$/kW/month	% Change
Wind Average Rate	\$1.09	1.04	-5%	\$0.99	-9%
Wind 30-15	\$0.73	\$0.75	3%	\$0.72	-1%
30-15 Reg	\$0.08	\$0.13	63%	\$0.12	50%
30-15 Fol	\$0.32	\$0.42	31%	\$0.40	24%
30-15 Imb	\$0.33	\$0.21	-36%	\$0.20	-39%
Wind 30-60	\$1.20	\$1.01	-16%	\$0.96	-20%
30-60 Reg	\$0.08	\$0.12	50%	\$0.12	49%
30-60 Fol	\$0.32	\$0.41	28%	\$0.39	23%
30-60 Imb	\$0.80	\$0.47	-41%	\$0.45	-44%
Wind Uncommitted	\$1.48	\$1.20	-19%	\$1.15	-22%
30-60 Reg	\$0.08	\$0.13	63%	\$0.12	51%
30-60 Fol	\$0.32	\$0.42	31%	\$0.40	25%
30-60 Imb	\$1.08	\$0.66	-39%	\$0.63	-42%
Wind CSGI	\$0.40	\$0.49	23%	\$0.47	18%
30-60 Reg	\$0.08	\$0.12	50%	\$0.11	40%
30-60 Fol	\$0.32	\$0.38	19%	\$0.36	13%
30-60 Imb	\$0.00	\$0.00		\$0.00	
Solar	\$0.21	\$0.28	33%	\$0.27	29%
Reg	\$0.04	\$0.03	-25%	\$0.03	-25%
Fol	\$0.17	\$0.11	-35%	\$0.10	-41%
Imb	\$0.00	\$0.14		\$0.13	

Rate Impact Applying Preliminary Forecast Capacity Cost

		BP-18 Estimate			
		Status Quo Method		Entire System Method 1	
DERBS	BP-16 Rates	mills/kW max hourly deviation	% Change	mills/kW max hourly deviation	% Change
	18.15	30.36	67%	28.97	60%
	3.94	2.73	-31%	2.73	-31%

Rate Impact Applying Preliminary Forecast Capacity Cost

		BP-18 Estimate			
		Status Quo Method		Entire System Method 1	
Regulation and Frequency Response	BP-16 Rates	mills/kWh/month	% Change	mills/kWh/month	% Change
	0.12	0.14	17%	0.13	8%

		BP-18 Estimate			
Operating Reserves		Status Quo Method		Entire System Method 1	
	BP-16 Rates	mills/kWh/month	% Change	mills/kWh/month	% Change
Operating Reserve - Spinning	11.40	12.48	9%	11.09	-3%
Operating Reserve - Supplemental	10.45	10.42	0%	11.09	6%

DERBS Subteam Takeaways

- Not all DERBS stakeholders could attend the subteam meeting.
- Reducing DERBS applicability by moving co-gen resources from the DERBS bucket to the load bucket. Difficult to support in rate case without supporting data or some other resource distinctive characteristic.
- Potential resource distinctive characteristic could be “behind-the-meter” co-generation resource serving only onsite load. Most co-gens paying for DERBS are currently marketed.
- A new rate design with a fixed charge worth further exploration. Stakeholder support ultimately dependent on customer cost impact (next step).
- Further education and evaluation related to the calculation of the dispatchable resource balancing reserve requirement.
 - To aid understanding of how the Incremental Standard Deviation (ISD) works - craft numerical example(s) that illustrate how the ISD methodology would change with the formation of additional category buckets (*i.e.*, Wind, Solar, DER, and Load)

Solar VERBS

- Continue to explore the prospects of additional forecasting and scheduling practices (currently matrix scheduling^{/1} is used to set rate). Adoption criteria:
 - Low implementation costs to implement.
 - Potential to be superior to matrix scheduling.
- Further explore service and rate design.
- Further education and evaluation related to the calculation of the solar resource balancing reserve requirement.

^{/1} An hourly scheduling method computed based on historical month-of-year and hour-of-day generation analysis, which provides a solar plant with a schedule far in advance of the scheduling period.

History of Solar VERBS Rate

- The BP-12 Solar VERBS rate was set at $\frac{1}{2}$ of the Wind VERBS rate
 - No data was available to forecast the reserve requirement in a manner similar to wind and thermal resources^{/1}.
 - The study assumes a wind and solar site of the same capacity would have the same reserve requirement^{/1}.
 - Halving the rate is based on the assumption that a solar site will generate no more than an annual average of 12 hours in a 24-hour day^{/2}.
- Actual generation data from a 1.65 MW Sacramento area solar site was used to determine the reserve requirement for the BP-14 Initial Proposal.

^{/1}Generation Inputs Study Documentation, BP-12-E-BPA-05A, Section 2.4.3

^{/2}Direct Testimony, BP-12-E-BPA-24, Section 4.5

History of Solar VERBS Rate

	BP-12	% Change BP-14 IP /1 from BP-12		BP-14 Settled	% Change from BP-12	% Change from BP-14 IP	% Change BP-16 Settled from BP-14	
Solar	\$ 0.22	\$ 0.25	14%	\$ 0.21	-4.5%	-16.0%	\$ 0.21	0%

- Over time the Solar VERBS rate has moved both up and down.
- In the BP-16 Settlement, the Solar VERBS rate did not change.

Other Possible Small Changes

- Remove 40/15 Scheduling Election
- Modification to solar phase-in language in rate schedules.

Other Future Issues to Resolve

- Make clear the financial impacts associated with the uncertainty of when wind farms leave the BPA Balancing Authority Area – direct assignment and otherwise.
- Planning standard used to set the DEC balancing reserve requirement.
- Addressing risk associated with providing Balancing Capacity. Potentially dependent on outcome of yet-to-be-developed Transmission Services risk mechanisms. May be discussed on August 9th or 10th.