

Resources Shaping Adjustment & Resource Support Services

September 13, 2007

Bonneville Power Administration
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**For Regional Dialogue Discussion
Purposes Only -- Pre-decisional**



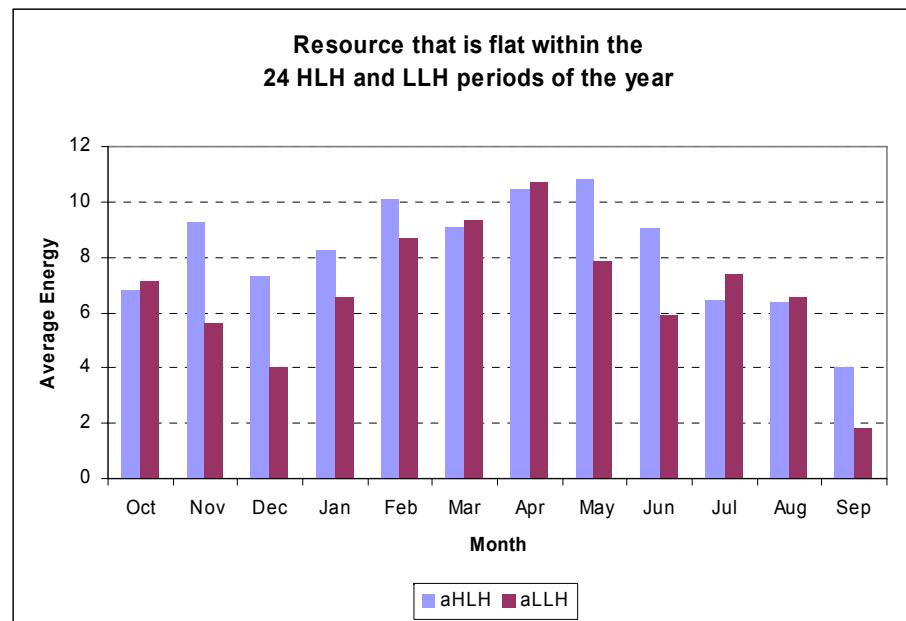
RSA versus RSS

- The Resources Shaping Adjustment (RSA) is a charge or credit that adjusts for the value difference between the planned resource energy shape and a flat annual block. If actual generation differs from planned generation and/or if energy is not flat within the 24 HLH and LLH periods of the year, the RSS will need to be provided.
- The Resource Support Service (RSS) is a service that financially makes a variable resource (that is dedicated to load) comparable to a resource that generates power in a shape that is flat within the 24 HLH and LLH periods of the year.



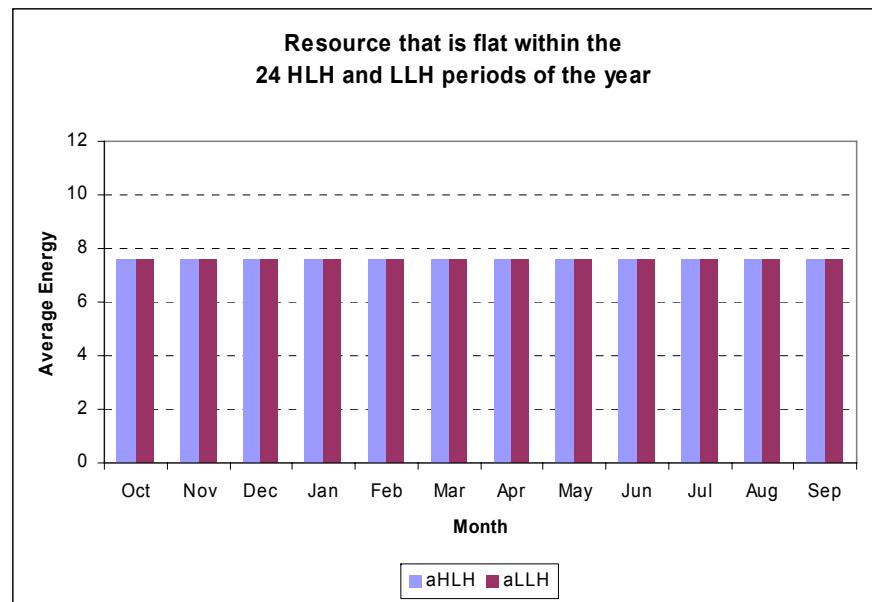
Why RSA?

- Based on the *Long-Term Regional Dialogue Final Policy* that states that resources serving net requirements above a utility's High Water Mark (HWM) will likely be benchmarked off a flat annual block.
- RSA takes this planned resource shape...



Why RSA?

- And financially converts it to....



- The RSA could be reflected in the Tier 1 rate design (possibly as a load shaping charge) or through its own separate billing adjustment.



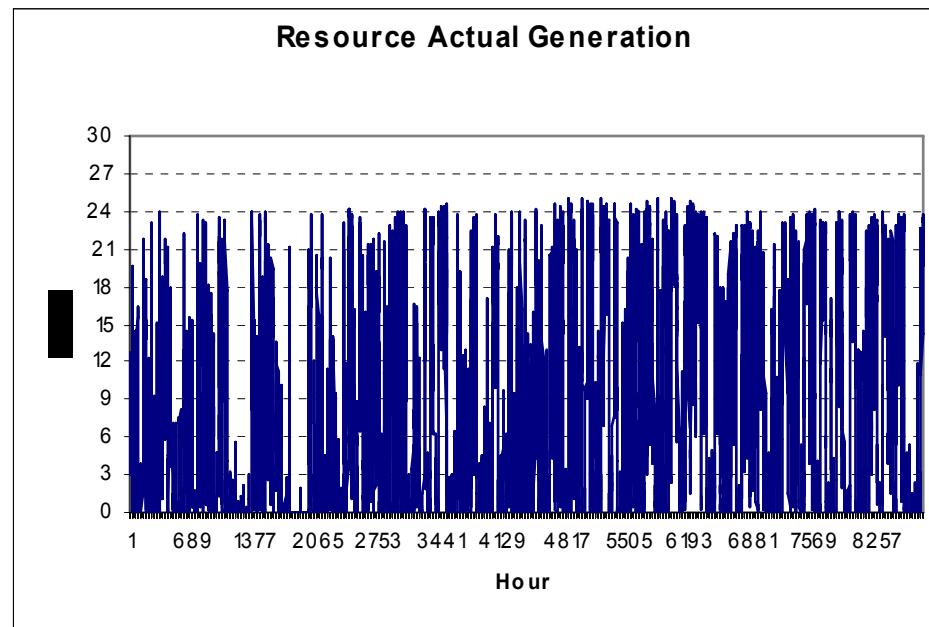
Who needs RSA?

- The RSA is only applicable to load following customers since the shape of non-federal resources delivered to load following customers will impact Tier 1 service.
- Block and Slice/Block customers have contractual schedules that remain unaffected by resource shape.
- Resources serving load above HWM that do not generate power in a flat annual block.



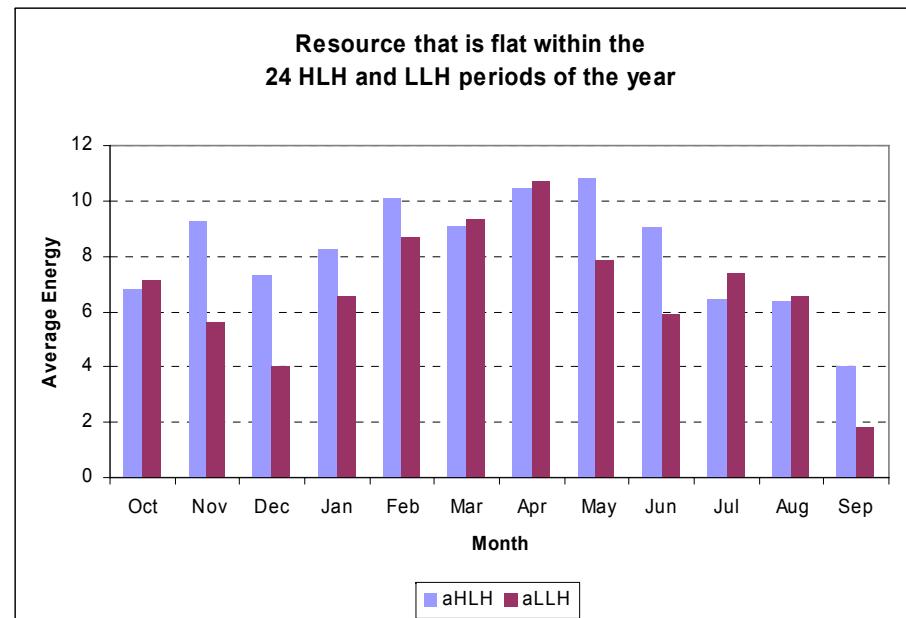
Why RSS?

- Based on the *Long-Term Regional Dialogue Final Policy* that states that resources serving net requirements above a utility's High Water Mark (HWM) will likely be benchmarked off a flat annual block.
- RSS takes this actual resource shape...



Why RSS?

- And financially converts it to this planned resource shape...



Who needs RSS?

- The RSS will need to be provided for all resources serving load above HWM in order to comply with the designated 24 flat blocks as created by the RSA.
- This service will apply to Federal and non-Federal resources.
- This service can be provided by Federal or non-Federal sources.



Pricing RSS

- The pricing of RSS must consider that the costs of services subject to Tier 2 rate pricing is not supposed to be subsidized by Tier 1 rate costs.
- In order to accommodate this objective, a non-FBS technology is used to approximate the cost of providing RSS.



Shaping Technologies

- Several technologies and financial tools could be used to approximate the cost of providing RSS.
 - Technologies on the horizon (i.e. Compressed Air Energy Storage, batteries, flywheels, etc.)
 - Put and Call Options
 - Combustion generation (i.e. gas turbine and piston engines)
 - Pumped hydro storage



Pumped Hydro Storage

- The objective of the RSS pricing approximation is to use the technology or financial tool that will provide this service at the least cost.
- The draft RSS pricing methodology paper chose pumped hydro storage as its resource for approximating the cost of providing RSS.
 - BPA's initial calculations showed that pumped hydro storage was a strong candidate for being the least cost method.
- In addition to trying to find the least cost method of providing RSS, the hydro pumped storage was selected to convey our concept because of simplicity relative to the other alternatives and data availability.

Complexity and High Cost

- Hourly Put and Call Options were explored, but availability and high cost removed it from our draft RSS paper.
- A gas turbine was also explored, but was removed from the paper due to its complexity and potentially high cost.
 - Type of gas turbine – SCCT/CCCT
 - Size of gas turbine – relative/fixed
 - Energy neutrality
 - Price of natural gas
 - Appropriate efficiency curve

Integration Overlap

- The Wind Integration Action Plan (WIAP) started the process of addressing the integration of wind energy into the Pacific Northwest.
 - This primarily means within hour variability
- The RSS methodology assumes that the RSS will not impact within hour variability (i.e. the pump that is theoretically supporting a variable resource will not change output or input within the hour).
- It is possible that future wind smoothing technologies used to fulfill the flat annual block requirement for purchases at the Tier 2 rate could also adjust within the hour to help integration.
 - If this was determined to be true, this topic is outside of the Regional Dialogue scope.

Regional Wind Capacity Study

- The draft RSS methodology used wind data that had a capacity value of zero.
- BPA is aware that a study is being done to assess the capacity value of wind.
- BPA plans to take the results of the study into consideration and if appropriate incorporate the results into its RSS methodology.



RSS Firm Capacity and Customer Firm Resource Capacity

- BPA proposes to treat firm capacity purchased through the RSS the same as firm capacity brought by a customer resource.
 - Consistent treatment between self, third party, and BPA-provided RSS
- BPA also proposes that marginal cost-based Tier 1 demand rate be equal to the marginal cost based capacity used to approximate the cost of providing RSS.
- See graph handout.