



Fact Sheet

November 2020

Hydropower planning and power supply

Bonneville Power Administration was created in 1937 to sell hydroelectric power generated by Bonneville Dam to publicly owned utilities in the Northwest. As more federal dams were built in the region, the agency began selling power from those facilities as well. Today, there are 31 federal dams in the Federal Columbia River Power System (FCRPS). The power produced by these dams, as well as that produced by the nonfederal Columbia Generating Station nuclear plant along with other acquired resources, is made available to BPA's preference customers with Regional Dialogue contracts.

While the amount of water moving through the FCRPS is highly variable and, at times, difficult to predict, the volume of flow and when it occurs greatly affects how much hydropower BPA has available to sell to its customers. Therefore, forecasting the amount of hydropower that can be produced is critical to meeting the energy needs of BPA's customers. BPA has developed methodologies and tools to forecast the firm power supply content that can be produced given the variable water conditions that affect hydropower production.

BPA's standard practice is to forecast the amount of firm power the FCRPS can be expected to produce based on the driest or worst water years on record. This is known as critical water planning. Currently, BPA uses conditions that occurred from October 1936 through September 1937 as a baseline and refers to it as 1937 historical critical water conditions. With 1937 critical water as the baseline for FCRPS hydro planning, BPA then overlays river operation demands, including irrigation, fish passage, flood risk management and recreation. Planners refer to the resulting amount, or inventory, as critical firm power. This is the amount the FCRPS can be expected to produce

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on a continuous basis to supply the firm power used to satisfy the administrator's firm power supply obligations. It is also used to develop power rates and to determine the amount of firm requirements power BPA sells under [Regional Dialogue](#) contracts at the Priority Firm (PF) Tier 1 rate.

Since the baseline critical firm power is based on conservative assumptions of what the FCRPS will produce, BPA may have additional firm power available to sell as surplus. BPA offers and sells surplus power through its bulk marketing trading floor. Revenues earned from such sales are credited to BPA's firm power rates, which helps lower or minimize such rates. Using a less conservative assumption around water supply would result in greater amounts of power available as critical firm power, but would inherently result in a reduction in the amount of surplus power credited back in rates.

How Regional Dialogue contracts incorporate hydro planning concepts

Contract High Water Marks

Contract High Water Marks (CHWM) are used to determine how much firm power a Regional Dialogue customer is entitled to purchase at BPA's Tier 1 PF rate. CHWMs were established based on a utility's historical load in 2010, and then scaled proportionally to use the full amount of critical firm power expected of the FCRPS. The use of CHWMs and the tiering of PF rates under the Tiered Rate Methodology is intended to make the cost of the firm power sold under the Regional Dialogue contracts transparent.

Rate Period High Water Mark

Forecasting the expected production of hydropower — especially the FCRPS — is complicated considering the many flexibilities and constraints, including seasonal and annual water variability, statutory, treaty, and other legal obligations, that can affect operations over time. The Regional Dialogue construct recognized these factors and established an approach, through the biennial Rate Period High Water Mark (RHWM)

process, to measure system output over time and accommodate changes in system operations. RHWMs reflect updates to the projected capability of the Tier 1 FCRPS resources and costs for each two-year rate period and in turn determine the amount of firm power a customer can purchase during that rate period at the Tier 1 PF rate.

Unused critical firm power

The [Tiered Rate Methodology](#) establishes a special treatment for amounts of critical firm power that customers with Regional Dialogue contracts are unable to purchase at Tier 1 PF rate because they don't have enough load to purchase the full amount available to them under their RHWMs. The value of this unused critical firm power, or unused RHWM, is shared proportionally with all Regional Dialogue customers and built into BPA's rates, including adjustments for times when unused critical firm loads differ from rate case forecasts. This ensures that the full value of the federal system is shared equitably across all customers with Regional Dialogue contracts.



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