

## **Chief Joseph Turbine Runner Replacements**

The Chief Joseph Turbine Runner Replacements project involves replacing the turbine runners and refurbishment of all wearing components of units 5-14, and conducting further study on the economic costs and benefits of replacing the turbine runners of units 1-4, 15 & 16.

Since their installation over 50 years ago, there have been significant hydraulic changes that have modified the original hydraulic operating conditions for turbine units 1-16. These changes include: a 10-foot pool raise, addition of units 17-27, and a tailwater rise from the construction of Well's Dam. With these changes, units 1-16 can no longer achieve nameplate capacity during high flow conditions. In addition, due to their age and metallurgy, units 1-16 require extensive maintenance and welding repair to address cavitation damage. Turbine performance testing for units 1-16 has demonstrated degradation in turbine efficiency. This project will offer efficiency improvements (6%) as well as eliminate the need for annual cavitation weld repair, and presents a clear economic opportunity for BPA. The proposed replacements will also offer operational flexibility, provide an annual increase in energy production and will further improve the long-term reliability of these units.

The total project capital cost, including AFUDC and overheads, is estimated to be \$114.6 million. The refurbishment will take place from FY2009 through FY2014.