

## **McNary Turbine Design and Replacement**

The McNary hydroelectric turbines were installed from 1954 to 1957. Recent projects to rewind the generators, replace transformers and improve station service along with planned projects to replace exciters, governors and powerhouse controls all align with the turbine runner replacements in this project. In addition to increasing reliability, the project will focus on improving fish passage, increasing turbine runner efficiency and increasing unit hydraulic capacity consistent with the generator winding up-rates recently completed. This project will utilize the same collaborative and iterative design process that was used for the replacement of the turbine runners at Ice Harbor. This process includes testing to ensure the design provides for safe fish passage while improving turbine efficiency. It will include physical hydraulic modeling of the existing turbine to establish baseline conditions for points of comparison and to identify potential improvements within the water passageway.

In addition to replacing the turbine runners, this project includes replacement of the stator windings on units 5, 13, and 14. These units were not included in the previous winding replacement project. The unit 5 winding will be replaced with an existing 100MVA spare winding and the windings on units 13 and 14 will be uprated to match the 100MVA rating consistent with the rest of the turbine generators.