

Carrying non-spinning reserves above 1% at McNary and TDA.

3/30/17

Currently the Federal Columbia River Power System (FCRPS) is experiencing unusually high streamflows in excess of powerhouse capacities resulting in total dissolved gas (TDG) saturation levels exceeding the state water quality standards. These conditions are expected to persist at least through the month of April depending on streamflows. During this period BPA is attempting to fully load all of the available turbines to control TDG levels as close to the state standards as possible.

Prior to April 1 the turbines were allowed to be operated up to full load. After April 1 turbine operations are restricted to operating within 1 percent of their peak efficiency. At McNary Dam and The Dalles Dam the 1% restriction results in a significant reduction the amount of water that can flow the turbines. When streamflows are at more typical levels the restriction does not result in a noticeable change in spill at the dams. However, during very high streamflow conditions, such as is the case this year, the reduction in turbine flow exacerbates the already high TDG saturation in the river. Example: With the current high flows, restricting the flow through units to the 1% band will result in ~30-60 kcfs more spill at each of McNary and The Dalles dams. The increase in spill flow is estimated to raise the TDG saturations levels level 1-3% above current levels which are exceeding 120%.

To maintain the reliability of the power system, a portion of the generation in the system must be held in reserve to account for unexpected increases in electricity demand, voltage or frequency. In order to provide the required reserves a generator must unload turbines to create unused capacity and make sure there is sufficient water available to utilize that capacity. A certain amount of these reserves must be available for deployment in seconds and are therefore required to be held on a generator that is already spinning. Some level of the required reserves can be non-spinning, meaning the reserves need to be deployable within 10 minutes. To maintain the required reliability of the power system at least half of the required reserves in the system must be spinning.

BPA is proposing to use the system capability above the 1 percent operating range at McNary and The Dalles dams as a non-spinning reserve. . If implemented the ability to deploy non-spinning reserves in this manner will allow BPA to fulfill a portion of our reserve requirements and minimize spill above the state water quality standards. The operation will be rescinded when streamflows recede sufficiently to allow the reserves to be held within the FPP spill caps with the turbines operation within the established 1 percent operating range.

If not implemented, in order to carry reserves, BPA will be required to further restrict the operation of units within the established the 1 percent operating range, resulting in additional spill and increased TDG saturation levels above the state water quality standards until streamflows recede as noted above.