

CASE STUDIES | SERVICE-BASED FORECAST SYSTEMS

LARGE-SCALE HYDROPOWER CLIENT

Taking advantage of forecasts to fill critical information gaps

This client operates a multi-reservoir system for hydropower generation and flood management. During high flow events, the volume of water entering each reservoir as runoff from its local area watershed (i.e., the local inflow) can significantly contribute to reservoir shoreline and downstream flood impacts. Despite this, operators previously had no direct information to quantify expected local inflows, thus they had to rely heavily on operator experience and rules of thumb, along with precipitation forecasts, to estimate local inflows when making operating decisions.

To help fill this critical information gap, RTI developed the Water Forecast Portal to harvest publicly available, high resolution streamflow forecasts from the NOAA National Water Model (NWM). These forecasts provide operators with hydrologic model-based estimates of local inflows, reducing their reliance on rules of thumb and increasing their confidence in decisions.

To generate the needed information, RTI extracts and post-processes NWM forecasts, aggregating flows across the watershed that enter each reservoir. Along with the inflows, RTI provides estimates of forecast uncertainty and qualitative evaluations of model performance. The client accesses the information via a secure website that displays custom-designed plots and summaries, which require minimal user interaction and are automatically updated on an hourly basis.

Added features, such as an interactive basin map, exceedance warning thresholds, and concurrent visualization of multiple precipitation and streamflow forecasts enhance the utility and relevance of the system for this client's decision-making process.

