



Transmission Services

Limiting Wind Output to Scheduled Value

Date: March 20, 2009

This summary of BPA Transmission Service DSO 216 is posted to give all customers needed information concerning limiting output of variable generation. It will be updated as new systems are implemented to limit output of variable resources.

Purpose

The purpose of Dispatcher's Standing Order (DSO) 216 is to provide instructions on limiting wind generation to the amount scheduled when there is insufficient regulating capacity available to offset the over generation of wind, or if the over generation of wind is causing a path to reach or exceed its SOL.

Procedure

A. There are three methods for determining if over generation of wind is potentially affecting system reliability with regards to regulation capacity described below:

1. The Hydro Duty Power Scheduler's (Scheduler) determination that the system can not regulate down any more due to constraints on the river system.

When the Scheduler sees that the Federal hydro system is constrained, the Scheduler will call the Generation Dispatcher to request that the Generation Dispatcher limit wind output to the scheduled value. The Scheduler will explain to the Generation dispatcher the cause of the limitation.

2. The Generation Dispatcher seeing that the AGC system does not have down regulation available due to the on-control plants getting within 50 MW of their minimum generation capability. If there is availability on other Federal hydro projects, the Scheduler can adjust the set up of the hydro system so the response of the BPA hydro is on plants with room to move. Otherwise, limiting the wind generation is needed.

The Generation Dispatcher will see on the Powerhouse Data display that the plants on control have less than 50 MW available between actual output and minimum generation. Until an alarm is created for this condition, it can be seen by an ACE of between +50 and +100 MW for a period of five minutes, at which time the Powerhouse Data display can be viewed and the down regulation calculated by subtracting the minimum generation from the actual generation for all plants on Auto response. Another indication is a large wind Station Control Error and AGC going into Baseload assist mode. If either of these two issues occur, the Generation dispatcher should call the Scheduler and have the Scheduler modify the basepoints of all the powerhouses if possible in order to make more down regulation available. If this is not possible, the wind output must be limited.

3. The RAS dispatcher determines that the over generation of wind is negatively affecting flows on a path to a point where some form of mitigation will be necessary.

When the RAS dispatcher determines that the over generation is causing a path to reach or exceed its SOL and the Scheduler cannot move the response of the FCRPS to correct the problem, limitation of wind will be necessary.

B. In order to limit wind, the following steps are taken:

1. Generation Dispatcher calls up the Wind Generation
2. In order from largest positive Station Control Error (SCE) to smallest, notify the wind generators to limit their output to their scheduled value.

3. The limitation will remain in effect for a minimum of two hours, at which time the wind generators should have their schedules modified to match the actual generation of their project(s).
4. Log the limitation including the wind facilities affected and reason for limiting wind.

Discussion

During the runoff during spring of 2008 and into the summer, there were multiple times that BPA ran out of down regulation on the Federal System. The primary cause of this was over generation by the wind generators inside the BPA Balancing Authority Area.

An automated system is being created that will limit the wind output to the scheduled value with the push of a button on the Misc Wind Generation display. Due to the complexity of setting up the communications to the wind generators, this automated function will not be in place until April 2009 at the earliest.