



BPA TRANSMISSION SERVICES
Transmission Wind Integration Systems Team

VELMA
VARIABLE ENERGY LIMIT AND MONITOR APPLICATION
(DSO 216 – PHASE II)

PROJECT OVERVIEW

VERSION: 0.1
UPDATED: 7/29/2009

1 PURPOSE / BACKGROUND

Much of the wind on the BPA system has been developed in the Lower Columbia region. Wind projects located in the same general area tend to move up and down simultaneously, frequently resulting in large, unscheduled swings in wind generation. This causes BPA to increase or back off generation in like amounts in real time to maintain the constant balance of loads and generation needed to keep the lights on. Today, BPA provides these balancing services from federal dams. But the hydro system's limits are being reached. Excessive wind generation imbalance is beginning to impose real consequences on power system operation that could affect system reliability.

On April 3, 2009, BPAT put into effect the procedures to limit wind generation during times of extreme over generation. Dispatcher Standing Order (DSO) 216 allows BPAT Dispatchers to order an over generating wind facility to reduce its generation back to its schedule. We are calling this first implementation of operational controls Phase I – Limit Wind to Schedule.

The purpose of Phase II of this effort is to deliver a set of software tools that allow Dispatchers to monitor the amount of regulation reserves deployed and to issue warnings, directives to limit generation, and curtailments of e-Tags to wind farms. This automation will allow BPAT to reduce the use of Regulation and Load Following reserves for extreme events. The reduction in the amount of reserves required will lower the cost of providing those reserves. The initial implementation will allow for Dispatchers to take action consistent with BPAT's OATT and Rate Case. The operational protocols are discussed in the BPAT white paper [Connecting Variable Generating Resources to the Federal Columbia River Transmission System \(FCRTS\)](#). Internally, the name of this project is VELMA, which is an acronym for *Variable Energy Limit and Monitor Application*.

1.1 ASSUMPTIONS

- BPA has the right to impose these protocols under the current OATT and LGIA.
- The dispatcher will have the final determination of initiating a limit or curtailment action.
- The default reserve limits will be developed using the methods used in the Rate Case and will be outside of the scope of this project.
- The calculations of reserve usage and status determination will be done within AGC.
- Directives will be sent directly to the wind facilities via dedicated circuits.
- Curtailments will be made automatically using the procedures developed for the network curtailment calculator.
- A secure web-based application will also be available for operators to monitor wind facility and reserve status.
- Only wind facilities (or parts of wind facilities) in the BPAT Balancing Authority are subject to these operational protocols.
- Hardware connections (e.g., OASIS, OATI, monitoring web page, etc.) to implement DSO 216 are in place by October 1, 2009.
- Training is complete for R/T schedulers on dispatch procedures to respond to customer phone calls.
- Policy and procedures issues are addressed on transmission utilization showing before and after DSO actions (e.g. what to do when no tag is submitted? Connection to Failure to Comply provisions is understood; relationship to congestion management is defined and communicated.)
- BPA's ability to enforce policies and procedures is clearly defined and enforceable.
- Close coordination with DSO implementation between System Operations and M & S has taken place.
- Development and training of System Operations procedures are assisted by M & S.
- Identify necessary requirements on LGIA agreements including the Non-disclosure agreement process, procedures, record keeping.
- Non-disclosure agreement could be interpreted October 2009.
- Impacts to wind customers in our BA and adjacent BAs are understood.
- Reconcile any issues with LGIA.
- Ability to use the scheduled JOC (Monthly) and WIT public meetings to communicate with customers