

IESO Engagement

From: Peter Inman
Sent: August 14, 2017 10:30 AM
To: IESO Engagement
Subject: Enabling System Flexibility - Response to Proposed Interim Solution

At the Enabling System Flexibility Meeting #4 held on August 1, 2017 the IESO proposed increasing Operating Reserve to address price spikes. The IESO stated that these price spikes were due to Forecast Uncertainty of Variable Generation (VG). The timing and variability of VG output, notably wind and solar generation were cited as the cause.

The IESO should seriously reconsider the proposal to increase Operating Reserve, even on an interim basis for the following reasons:

1. It does not address the root cause of price spikes that were said to be due to forecast uncertainty of the timing and variability of VG output
2. It uses Operating Reserve for other than its intended purpose
3. It will reduce efficiency and increase costs for all ratepayers - in the example given increased OR was carried for 14 hours when the uncertainty period was 2 hours duration.

The price spike problem underscores the need for operating flexibility and improved forecast mechanisms for Variable Generation (VG).

It would be better to address VG forecast uncertainty directly through an engagement with VG wind and solar generators to improve the accuracy of wind velocity and solar irradiance conversion to electrical energy. For wind energy, the objective would be to provide improved fidelity of wind velocity to wind energy curves for each wind farm based on the specific design of the wind turbines referenced to local meteorological tower wind velocity. For solar generation, solar irradiance to solar energy curves will provide the timing and output of solar energy dependent on the position and orientation of solar panels, the time of year (date) and GPS location of the solar field. Both wind and solar generators will monitor performance of their assets and update output curves for equipment condition or deratings that would reduce generation from design.

These measures will reduce the uncertainty of wind velocity and solar irradiance conversion to energy, leaving weather-related wind velocity and cloud cover as the residual uncertainty. The VG forecast energy model would then be based on the median forecast of wind velocity and solar irradiation at each site: - these forecasts are well established through meteorological and satellite imagery that provides data on a near real time basis.

A further enhancement of forecast energy from VG sources could be through the deployment of on-site energy storage that would capture excess generation when not needed and dispatch energy when needed by the market. The economics of these dispatchable wind and solar resources would need to be determined, but would provide increased operating flexibility to the market.

Respectfully submitted

Peter Inman, P. Eng., MBA, CEM, CMVP
Principal Consultant
Powerful Solutions