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Implementation of
Real-time Operating Limit Assessment Engine

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Abstract

The California Independent System Operator, which provides open and non-discriminatory access to the bulk of the state of California's wholesale transmission grid, supported by a competitive energy market and comprehensive infrastructure planning efforts, imlpemented the Bigwood Systems On-line Voltage Stability Analysis and Enhancement (VSA&E) tool in 2008. The tool VSA&E provides the following measure for both base-case and a list of contingencies:

- Contingency analysis and ranking
- System Load Margin
- Interface Flow Margin
- Preventive control
- Enhancement control

This original on-line implementation was established to identify the Voltage Collapse point for a comprehensive contingency list. In 2014, this method was expanded to include thermal monitoring and post-transient low voltage. This Online Operating Limit Calculation extends the monitoring and control functions of VSA&E to application for determining on-line limit settings. These limits are based on the current state of the system to deliver more effective power network operation resulting in increased transfer of renewable energy resources and overall market efficiency.

This talk will address the architecture and implementation of the Online Operating Limit Calculation and its application to the power market covering the entire USA West coast as the Western Electricity Coordinating Council (WECC), the Federal Regional Entity for the Western Interconnection has adopted use of this BSI online operating limits determination tool.