

Initial Analysis

The initial N-1 contingency analysis was run on the WECC 18hs1p.sav review case and the 18hs1pPTI_CLRTPGr0.sav case. The 18hs1pPTI_CLRTPGr0.sav case has modifications from all the CO and WY utilities. The purpose of this analysis was to identify and address all remaining underlying issues before proceeding with the scenario analyses.

For criteria violations in each case, the simulations were run with the following criteria:

The screenshot shows a window titled "Criteria Specifications" with two main sections: "Criteria Violation Thresholds" and "Case Comparison Thresholds".

Criteria Violation Thresholds	Case Comparison Thresholds
System Normal Line Loading (%)	More Severe System Normal Overload (%)
System Normal Transformer Loading (%)	More Severe Contingency Overload (%)
Contingency Line Loading (%)	More Severe System Normal Voltage Violations (pu)
Contingency Transformer Loading (%)	More Severe Contingency Voltage Violations (pu)
System Normal High Voltage (pu)	More Severe Voltage Deviations (pu)
System Normal Low Voltage (pu)	Greater Count of Contingencies
Contingency High Voltage (pu)	
Contingency Low Voltage (pu)	
Voltage Deviation (pu)	
Lowest Reported Voltage Level (kV)	

After entering desired criteria, click below to return to the main menu.
You may return to the Criteria form by clicking on the Criteria Form button on the main menu.

Criteria Entered

When looking for issues that are unique to one case or the other, or more severe in one case or the other, the criteria bands were widened to the following:

The screenshot shows the same "Criteria Specifications" window, but with the "Case Comparison Thresholds" values widened.

Criteria Violation Thresholds	Case Comparison Thresholds
System Normal Line Loading (%)	More Severe System Normal Overload (%)
System Normal Transformer Loading (%)	More Severe Contingency Overload (%)
Contingency Line Loading (%)	More Severe System Normal Voltage Violations (pu)
Contingency Transformer Loading (%)	More Severe Contingency Voltage Violations (pu)
System Normal High Voltage (pu)	More Severe Voltage Deviations (pu)
System Normal Low Voltage (pu)	Greater Count of Contingencies
Contingency High Voltage (pu)	
Contingency Low Voltage (pu)	
Voltage Deviation (pu)	
Lowest Reported Voltage Level (kV)	

After entering desired criteria, click below to return to the main menu.
You may return to the Criteria form by clicking on the Criteria Form button on the main menu.

Criteria Entered

This was to catch only those violations that were legitimately unique to one case or the other, or more severe in one case or the other. For instance, if the worst loading on a certain line in case 1 is 98%, and that same line overloads in case 2 to 101%, that is not necessarily a unique issue to case 2.

The same criteria will be applied to subsequent cases, barring any unforeseen need to deviate from them.

Direction for Scenarios

Once the underlying issues have been dealt with, the next step will be to create each injection scenario, starting with scenario A (high and low wind penetration). One subject for discussion is the method of redispatching generation to accommodate the different scenarios. Initially, I intend to dispatch to generation inside each entity's service territory.