

**Increasing Renewable Energy in the
Western Grid Summit**

Accommodate Renewables: What are the Options

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September 28, 2007

Minimum Operating Reserve

- WECC BAL-STD-002-1 Applicability
 - Balancing Authority or
 - Reserve Sharing Group
- Existing WECC Requirement
 1. **Regulating reserve** - Sufficient Spinning Reserve, immediately responsive to Automatic Generation Control (AGC) to allow the Balancing Authority to meet NERC's Control Performance Criteria

Minimum Operating Reserve

2. Spinning Reserve and Nonspinning Reserve

- Cover the loss of generating capacity due to the most severe single contingency or
- Sum of 5% of the load responsibility served by hydro generation and 7% of the load responsibility served by thermal generation
- At least 1/2 must be Spinning Reserve



Minimum Operating Reserve

□ **Unclear**

- Where does wind or other renewable energy sources fit?
- What does load responsibility mean?
- Effect of interchange arrangements?
- Merchant agreements that refer to “firm” and “non-firm” and other market products?

Minimum Operating Reserve

- Proposed New WECC Standard
BAL-002-WECC-1
 - An amount of reserve equal to the loss the most severe single contingency; or
 - An amount of reserve equal to the sum of 3% of the Balancing Authority load and 3% net generation



Minimum Operating Reserve

- 1/2 of the Contingency Reserve is to be Spinning Reserve
 - Initially automatically responds to frequency deviations.
 - Capable of fully responding within ten minutes



Minimum Operating Reserve

Acceptable Reserves

- Spinning Reserve
- Interruptible Load;
- Interruptible exports;
- Reserve held by other entities by agreement; or
- The amount off-line generation which can be synchronized and generating within 10 minutes



Impact on Renewable Resources

(Assuming reserves need to be carried that are greater than MSSC)

- 3% of renewable resources must be carried as reserve
- 1/2 of that needs to be spinning reserve
- Still a requirement to also meet NERC performance criteria (regulation)



Renewable Industry Response

- Renewables that could be dispatchable would greatly enhance and add value to the system
 - Storage
 - Variable output



WAPA RMR ACCOMMODATION

- Long term non-firm transmission rate
- Allow wind to be considered “Network Transmission Resource”
- No Energy Imbalance bandwidth for renewable resources