



Memorandum

To: ISO Board of Governors

From: Randy Abernathy, Vice President of Market Services
Nancy Traweek, Director of Market Operations

CC: ISO Officers

Date: February 15, 2001

Re: *Splitting Operating Reserve Energy from Imbalance Energy*

This memorandum requires Board action.

The following memo describes an operational concern of combining in the Real Time imbalance energy stack, energy bids associated with procured Operating Reserves (Spin and Non Spin) with energy bids associated with procured Replacement reserves and submitted Supplemental energy bids.

Providers of Spinning, Non-Spinning, and Replacement Ancillary Services submit bids with two price components, capacity and energy. The Capacity price component is used in the Day Ahead and Hour Ahead markets to procure the required hourly Operating Reserve and Replacement Reserves. The energy price component is used in the real time imbalance energy stack to determine the order in which capacity from the Ancillary Service is converted to energy.

Spinning and Non-Spinning Ancillary Services are considered part of the Operating Reserves. These services are intended to be used for system contingency (loss of a generating unit or loss of a transmission path) or system emergencies (imminent loss of firm load, voltage collapse, or transmission path overload)

Currently, all Operating Reserve and Replacement Reserve energy bids procured in the Day Ahead and Hour Ahead Ancillary Service markets, are combined with Supplemental energy bids in the Real Time imbalance energy stack. Shown in Figure 1 below:

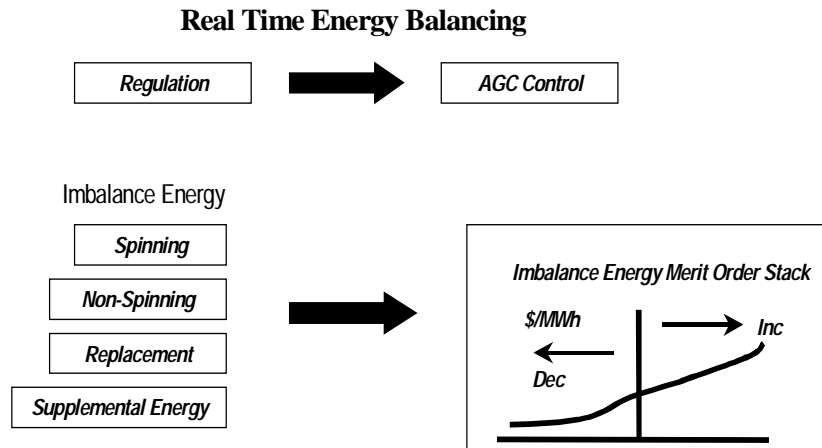


Figure 1: Current Real Time Energy Balancing

The ISO orders the imbalance energy bids by ascending economic merit to compose the quantity of energy available to increment or decrement for demand fluctuations in real time. The past several months have highlighted a situation of capacity shortages where in order to preserve Operating Reserves, Spinning and Non-Spinning energy bids in the imbalance energy stack are “skipped” routinely.

Recent Issues:

The combination of Operating reserve energy bids with Replacement reserve and Supplemental energy bids has posed the following concerns:

- Operating Reserve Capacity is converted to energy frequently for imbalance requirements due to underscheduling and not reserved for contingencies or emergencies
- In order to conserve operating reserve for contingencies or emergencies,
 - Energy bids from Spin and Non-Spin reserve capacity in the imbalance energy stack are “skipped “ (capacity is not converted to energy)
 - Operating Reserve capacity that has already been converted to energy for imbalance caused a shortfall in the minimum Operating Reserve requirements. Shortfalls in Operating Reserve requirements put the ISO in the position of calling staged emergencies.
- Ancillary Service providers that have capacity that they are willing to convert to energy only when there is a contingency or emergency are reluctant to bid into the markets in which energy is converted frequently for energy imbalance. An example of this type of provider is a Hydro resource that has a large amount of capacity behind a generator, in the form of water in a reservoir, but a limited amount of time that the water can be sent through the generator to produce energy.

Proposed Solution:

The ISO proposes to separate the Operating Reserve energy bids from the imbalance energy bids. This proposal is broken into two steps. Short term (2 to 3 week implementation) and Long term (software changes required implementation before summer).

Short Term Solution (2 to 3 weeks)

Completely separate Operating Reserve energy from the Replacement Reserve and Supplemental energy in the imbalance energy stack. Energy from Operating Reserves will be held for contingencies and emergencies only and not used for energy imbalances. Shown in Figure 2 below:

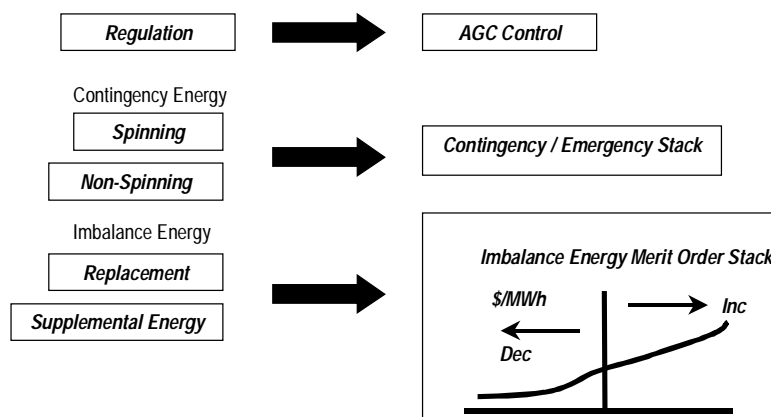


Figure 2: Real Time Energy Balancing with Ancillary Service energy used for contingency only

Contingency Energy will be dispatched accounting for energy limitations. Hours of energy production for each resource will be considered prior to dispatch instructions.

Longer Term Solution (prior to summer 2001)

The longer term solution will have a mechanism to give the Ancillary Service providers a choice: (a) to provide energy from Spinning and Non-Spinning reserves for contingency or emergency only due to energy limitations; or (b) to provide energy from Spinning or Non-Spinning reserves imbalance as well as contingencies or emergencies. Shown in Figure 3 below:

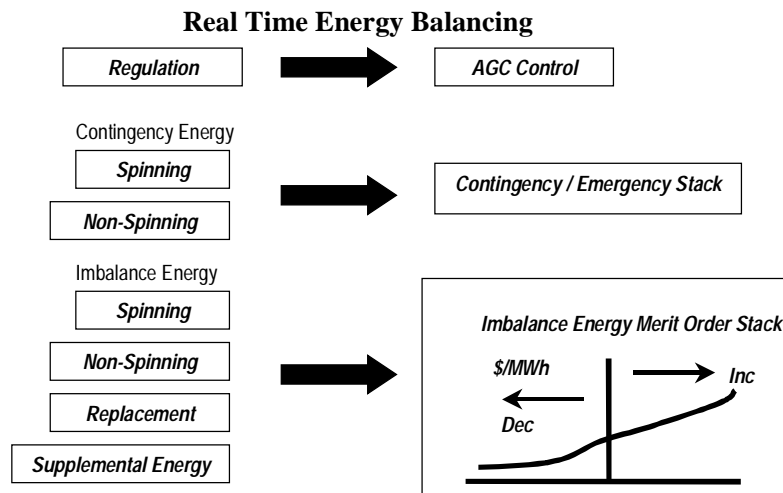


Figure 3: Real Time Energy Balancing with Ancillary Service energy used for contingency and imbalance

In either the short term or longer term solution, Rational Buyer software for Ancillary Service substitution will need to be modified to allow only the Spinning and Non-Spinning Reserve bids that choose to be used for imbalance energy to substitute required Replacement Reserve requirements. Shown in Figure 4 below:

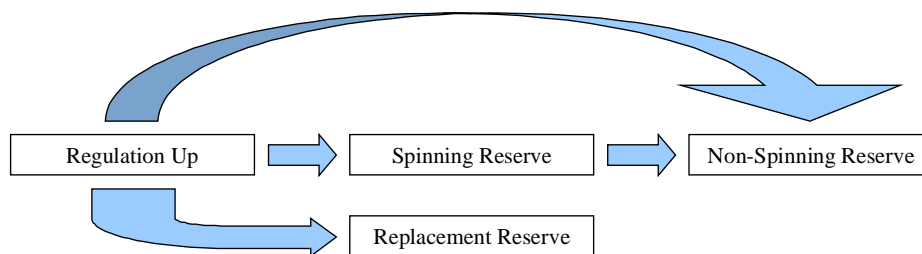


Figure 4: Modified Rational Buyer process

Recommendation

The ISO management recommends the adoption of this proposal. Separating contingency reserve energy from imbalance energy provides several benefits: The preservation of Operating Reserve for contingency and emergency use, incentive for capacity-rich but energy-limited resources to provide Ancillary Services, incentive for resources external to the ISO control area to provide Ancillary Services and comply with external control area regulations, and allows resources that have excess capacity and energy to provide imbalance energy as well as Operating Reserve energy.

MOVED, that the Board authorize ISO management to file with FERC to give the ISO the authority to modify the Imbalance Energy Market to separate real time energy procurement for Operating Reserve.