

BAL-003-0 – Frequency Response and Bias

Purpose:

Request for Interpretation, posted for recirculation ballot.

Standard:

BAL-003-0 was NERC BOT approved on May 13, 2009.

Request:

1. Does NERC BAL-003 require every Balancing Authority to have a Frequency Response close to 1% of its projected peak load?
2. Requirement R2 mandates that each Balancing Authority “establish and maintain a Frequency Bias Setting that is as close as practical to, or greater than, the Balancing Authority’s Frequency Response”. Given the sign convention of the Frequency Bias Setting as applied in the ACE equation, is the Frequency Bias Setting required to be a negative value as close as practical to, or greater than (in absolute terms), the estimated Frequency Response so that AGC will not move resources in a manner that would negate the primary response provided by frequency responsive resources?
3. A) When making the comparison between Frequency Response and Frequency Bias in R2, what is the proper method for this comparison? Should the estimated Frequency Response and Frequency Bias Setting be compared with their typical negative sign convention or in terms of their absolute values? B) In other words, in order to ensure that AGC does not drive resources to negate the primary response to frequency deviation provided by system resources, including governor response, does Requirement R2 require that the absolute value of the Frequency Bias Setting be as close as practical to, or greater than, the absolute value of the estimated Frequency Response per 0.1 Hz change?
4. Is there any defined measure to determine what “as close as practical” means? Requirement R5 mandates that each Balancing Authority that serves native load shall “have a monthly average Frequency Bias Setting that is at least 1% of the Balancing Authority’s estimated yearly peak demand per 0.1 Hz change. Does Requirement R5 require that the absolute value of the Balancing Authority’s monthly average Frequency Bias Setting be at least 1% of the Balancing Authority’s estimated yearly peak demand per 0.1 Hz change.
5. As the Frequency Bias Setting is typically calculated and applied as a negative value under R2, yet in R5 it is compared against a percentage of a Balancing Authority’s estimated yearly peak demand load and is typically a positive value, is the absolute value of the monthly average Frequency Bias Setting required to be at least 1% of the Balancing Authority’s estimated yearly peak demand per 0.1 Hz change? If not, how does one reconcile the sign convention differences between R2 and R5?
6. Does BAL-003 have any requirements that would set a value on the amount of Frequency Response that a Balancing Authority must provide?

NERC Interpretation:

1. BAL-003-0.1b does not have a Frequency Response performance obligation.
2. Yes, the Balancing Authority Frequency Bias Setting within the ACE equation is a negative value, expressed in MW/0.1 Hz and should be as close as practical to the natural Frequency Response. If Requirement R2 is met at all times by the Balancing Authority, AGC in Tie Line Bias mode will not move resources in a manner that would withdraw natural Frequency Response.
3. A) Frequency Response and Frequency Bias should be compared with their typical sign convention and not an absolute value. B) Yes, Requirement R2 mandates that the absolute value of Frequency Bias be as close as practical to the absolute value of Frequency Response. Thus, matching Frequency Response and Frequency Bias helps ensure proper AGC performance.
4. There is not a defined measure to determine what "as close as practical" means. Yes, Requirement R5 of the standard, as an alternate method of determining a Balancing Authority's Frequency Bias Setting, uses the Balancing Authority's estimated yearly peak demand, or the Balancing Authority's estimated maximum generation level in the coming year for Balancing Authorities that do not serve native load, as a proxy to determine the Balancing Authority's Frequency Bias obligation per 0.1 Hz change. A 1% value of yearly peak demand per 0.1 Hz or 1% value of estimated maximum generation level in the coming year per 0.1 Hz must be used as the minimum Frequency Bias Setting.
5. Yes, the absolute value of the monthly average Frequency Bias Setting is required to be at least 1% of the Balancing Authority's estimated yearly peak demand or at least 1% of the Balancing Authority's estimated maximum generation level in the coming year for Balancing Authorities that do not serve native load.
6. BAL-003-0.1b does not have any requirements mandating a specific magnitude of Frequency Response by the Balancing Authority.

Applicability:

Balancing Authorities

Current Status:

The interpretation was posted for recirculation ballot until February 26, 2010. The AESO voted in favour of the interpretation during the original ballot period and that vote will carry through the recirculation ballot. The interpretation was approved by the ballot body.

NERC Link:

[Frequency Response and Bias](#)