

Reporting ACE Definition Change and Comment Form

WECC RRC

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Reporting ACE Definition Change

The scan rate values of a Balancing Authority Area's ~~(BAA)~~ Area Control Error (ACE) measured in MW₂ which includes the error in scheduled interchange adjusted for Frequency Bias obligation, known meter error, and inadvertent management. ~~includes the difference between the Balancing Authority Area's Actual Net Interchange and its Scheduled Net Interchange, plus its Frequency Bias Setting obligation, plus correction for any known meter error. In the Western Interconnection, Reporting ACE includes Automatic Time Error Correction (ATEC).~~

Reporting ACE is calculated as follows:

$$\text{Reporting ACE} = \cancel{(NI_A - NI_S) - 10B(F_A - F_S) - I_{ME}}$$

~~Reporting ACE is calculated in the Western Interconnection as follows:~~

$$\text{Reporting ACE} = (NI_A - NI_S) - 10B(F_A - F_S) - I_{ME} + I_{IMATEC}$$

Where:

- NI_A = Actual Net Interchange.
- NI_S = Scheduled Net Interchange.
- B = Frequency Bias Setting.
- F_A = Actual Frequency.
- F_S = Scheduled Frequency.
- I_{ME} = Interchange Meter Error.
- I_{IMATEC} = ~~Automatic Time Error Correction~~ Inadvertent Interchange Management.
- In the Western Interconnection this term is I_{ATEC}



Reporting ACE Definition Change

All NERC Interconnections operate using the principles of Tie-Line Bias (TLB) control and require

the use of an ACE equation similar to the Reporting ACE defined above. Any modification(s) to this specified Reporting ACE equation that is(are) implemented for all BAAs on an Interconnection and is(are) consistent with the following four principles of Tie Line Bias control will provide a valid alternative to this Reporting ACE equation:

1. ~~All~~ Each individual portions of the Interconnection ~~are~~is included in exactly one BAA so that the sum of all BAAs' generation, Load, and losses es is the same as total Interconnection generation, Load, and losses es;
2. The algebraic sum of all BAAs' Scheduled Net Interchange is equal to zero at all times and the sum of all BAAs' Actual Net Interchange values is equal to zero at all times;
3. The use of a common Scheduled Frequency ~~FS~~ for all BAAs at all times; and,
4. Excludes metering or computational errors. (The inclusion and use of the I_{ME} ~~ME~~ term corrects for known metering or computational errors.)



New Terms!!!!

**Inadvertent
Interchange
Management –
(I_{IM})**

New term to NERC
glossary

**A term used in
Reporting ACE to
allow for
management of
Inadvertent
Interchange and
correction of Time
Error.**



Automatic Time Error Correction

The addition of a component I_{ATEC} , represented by the term I_{ATEC} , to the Reporting ACE-equation for the Western Interconnection that modifies the control point for the purpose of continuously paying back Primary Inadvertent Interchange and to correct accumulated Time Error. Automatic Time Error Correction is only applicable in the Western Interconnection.

$$I_{ATEC} = \frac{PII_{on/off\ peak\ accum}}{(1-Y)*H} \text{ when operating in Automatic Time Error Correction Mode.}$$

The absolute value of I_{ATEC} shall not exceed L_{Max} .

I_{ATEC} shall be zero when operating in any other AGC mode.

- L_{max} is the maximum value allowed for I_{ATEC} set by each BA between $0.2 * |B_i|$ and L_{10} ; i.e., $0.2 * |B_i| \leq L_{max} \leq L_{10}$.
- $L_{10} = 1.65 * \epsilon_{10} * \sqrt{(-10B_i)(-10B_s)}$
- ϵ_{10} is a constant derived from the targeted frequency bound. It is the targeted root-mean-square (RMS) value of ten-minute average Frequency Error based on frequency performance over a given year. The bound, ϵ_{10} , is the same for every Balancing Authority Area within an Interconnection.
- $Y = B_i/B_s$.
- H = Number of hours used to pay back primary inadvertent interchange energy. The value of H is set to 3.
- B_i = Frequency Bias Setting for the Balancing Authority Area (MW/0.1 Hz).
- B_s = Sum of the minimum-Frequency Bias Settings for the Interconnection (MW/0.1 Hz). For entities with a variable Frequency Bias, the entity's minimum Frequency Bias will be used.



Automatic Time Error Correction

- Primary Inadvertent Interchange (PII_{hourly}) is $(1-Y) * (II_{\text{actual}} - B_i * \Delta TE/6) * BA_{\text{Island}}$
- BA_{Island} = Binary term: 1 indicates the BA is interconnected; 0 indicates the BA is entirely islanded and not interconnected.
- II_{actual} is the hourly Inadvertent Interchange for the last hour.
- ΔTE is the hourly change in system Time Error as distributed by the Interconnection time monitor, where:
 - $\Delta TE = TE_{\text{end hour}} - TE_{\text{begin hour}} - TD_{\text{adj}} - \text{(t)} * (TE_{\text{offset}})$
 - TD_{adj} is the Reliability Coordinator adjustment for differences with Interconnection time monitor control center clocks.
 - t is the number of minutes spent performing ~~of~~ manual Time Error Correction that occurred during each ~~the~~ hour.
 - TE_{offset} is 0.000 or +0.020 or -0.020.
 - PII_{accum} is the Balancing Authority Area's accumulated PII_{hourly} in MWh. An On-Peak and Off Peak accumulation accounting is required, where:

Glossary Terms Scheduled for Retirement

Disturbance Control Standard – (DCS)

The reliability standard that sets the time limit following a Disturbance within which a Balancing Authority must return its Area Control Error to within a specified range.

Net Actual Interchange

The algebraic sum of all metered interchange over all interconnections between two physically Adjacent Balancing Authority Areas.

Net Interchange Schedule

The algebraic sum of all Interchange Schedules with each Adjacent Balancing Authority.

Net Scheduled Interchange

The algebraic sum of all Interchange Schedules across a given path or between Balancing Authorities for a given period or instant in time.



Glossary Terms Scheduled for Retirement

Reportable Disturbance

Any event that causes ACE change greater than or equal to 80% of a Balancing Authority's or reserve sharing group's most severe contingency. The definition of a reportable disturbance is specified by each Regional Reliability Organization. This definition may not be retroactively adjusted in response to observed performance.



Comment Form - ADI

1. Participating Balancing Authorities achieve reductions in their generation control and Reporting ACE by utilizing a frequency neutral form of ACE exchange, called ACE Diversity Interchange (ADI). Current implementations of ADI use offsets to either Actual Net Interchange or Scheduled Net Interchange ACE components to create an ACE value closer to zero for each participant. Guidance for implementing ADI processes is documented in a NERC technical reference document; however, concerns have been raised that not all participants may choose to include ADI in their Reporting ACE, which would result in the sum of Reporting ACE not being equal to zero for that interconnection. Since ADI is not currently a defined term, the standard drafting team (SDT) would like to poll industry. Please select one of the three options:



Comment Form - ADI

- Add a definition of ADI to the NERC Glossary of terms with no specification that ADI is to be included in Reporting ACE
- Add a definition of ADI to the NERC Glossary of terms with a statement that ADI must be included in Reporting ACE
- Leave ADI undefined.

Comments:



Implementation Plan

The SDT is proposing a 12-month implementation plan. Would this proposed time frame give enough time to implement the proposed changes? If you think an alternate time frame is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.



Balloting – I may be offed!

Note: There is a separate ballot for each of the definitions related to this project – a total of 36. It is necessary to join each ballot pool in order to submit votes on all the definitions



Questions?

