

Time Monitoring Reference Document

Introduction

This reference document outlines responsibilities of Reliability Coordinators serving as time monitors in the North American Interconnections. This document specifies how Manual Time Error Corrections (MTEC) are to be implemented, if needed, to resolve Time Error accumulations and outlines procedural responsibilities assigned to the time monitor.¹ Changes to this reference document will be at the direction of the NERC Operating Committee (OC).

Designation of Time Monitor

There will be one designated time monitor within each Interconnection. NERC's Operating Reliability Subcommittee (ORS) will select a time monitor for each Interconnection. At the annual December OC meeting, the ORS will notify the OC of the designated time monitors for the next two time monitor terms.

The minimum term of each time monitor shall be no less than one (1) year. With the exception of the Eastern Interconnection, the time monitor term shall be automatically renewed unless requested otherwise by providing a minimum of six (6) months' notice to the ORS. The Eastern Interconnection time monitor will rotate on an annual basis as outlined below. Should an existing or future time monitor no longer be willing or able to fulfill its responsibilities, the OC will, within the six (6) month period after notice, direct the ORS to select a replacement and communicate the transition plan to the OC.

NERC's Resources Subcommittee (RS) will report to the OC and ORS any Time Error accumulations resolved by implementing MTEC and provide the technical basis for the determination.

If a time monitor fails to fulfill its responsibilities, the ORS will work with the time monitor to resolve the problem. The ORS will submit a report to the OC either identifying corrective measures taken or providing a recommendation for a new time monitor.

Responsibilities of the Time Monitor

When a Time Error accumulation is resolved through MTEC, the time monitor will start and stop MTEC as outlined in Attachment A of this reference.

The time monitor will terminate any MTEC believed to be adversely impacting reliability. Requests for termination may be made by any Reliability Coordinator or by a Balancing Authority through its respective Reliability Coordinator. The time monitor will provide reports (as determined by the OC), including but not limited to accumulated Time Error following each MTEC.

¹ This reference document is provided for guidance and does not reflect binding norms or mandatory requirements.

Time Monitor Transition

The current time monitor will contact the next scheduled time monitor no later than October 1 to begin coordinating the transition that will occur on February 1 of the following year. This coordination should include such things as local time monitor procedures currently in use, data requirements, and communications. In the event unusual operating issues prevent the designated Interconnection time monitor from fulfilling its responsibilities, the previous time monitor should maintain the capability to perform the time monitor duties.

References

A copy of each time monitor's local procedure is available on an as needed basis. For additional information or to request a copy of the time monitor's local procedures, an entity should contact the current time monitor.

Interconnection Time Monitors

Each Interconnection has identified the following Reliability Coordinator as its time monitor:

1. ERCOT Interconnection – ERCOT Reliability Coordinator
2. Québec Interconnection – Hydro-Québec TransÉnergie Reliability Coordinator
3. WECC Interconnection – California ISO - RC West
4. Eastern Interconnection – The Reliability Coordinators in the Eastern Interconnection will rotate the time monitor responsibilities on an annual basis as follows:
 - a. SaskPower – February 1, 2019 through January 31, 2020
 - b. Southeastern – February 1, 2020 through January 31, 2021
 - c. TVA – February 1, 2021 through January 31, 2022
 - d. MISO – February 1, 2022 through January 31, 2023
 - e. IESO (Ontario) – February 1, 2023 through January 31, 2024
 - f. NBP (New Brunswick Power) – February 1, 2024 through January 31, 2025
 - g. VACAR-South – February 1, 2025 through January 31, 2026
 - h. SPP – February 1, 2026 through January 31, 2027
 - i. NYISO – February 1, 2027 through January 31, 2028
 - j. PJM – February 1, 2028 through January 31, 2029
 - k. ISO-NE – February 1, 2029 through January 31, 2030
 - l. FRCC – February 1, 2030 through January 31, 2031

Attachment A

Introduction

Interconnection frequency is normally scheduled at 60.00 Hz. Since control is imperfect, frequency will average slightly above or below 60.00 Hz. The implementation of a MTEC will correct Time Error accumulation outside the established control bands by adjusting the Interconnection's scheduled frequency.

Each Balancing Authority is expected to participate in Interconnection MTEC procedures unless it is operating asynchronously to its Interconnection. If a Balancing Authority is experiencing a reliability problem that would be aggravated by the correction, it must inform its Reliability Coordinator, so that the Reliability Coordinator can take appropriate action. The requirement to participate will be enforced through an Operating Instruction from the Reliability Coordinator acting as the time monitor.

Single Balancing Authority Interconnections or Balancing Authorities operating asynchronously may establish their own time error control bands and time correction methodology, but should notify the OC of the bands utilized, as well as subsequent changes.

Interconnections may choose to follow alternative procedures. If so, those procedures should be shared with the OC and approved by the OC.

General Practices

MTEC Notice and Commencement: MTEC is conducted following the process below.

1. **Time Error Correction Initiation and Termination.** MTEC starts and ends on the hour or half-hour with notice by the time monitor generally given at least one hour before the MTEC is scheduled to start or terminate.
2. **Time Error Correction labeling.** MTEC notifications are labeled on a monthly basis using an Interconnection approach (e.g. A-Z, AA-AZ, BA-BZ,...).
3. **Time Correction Offset.** The Balancing Authority may participate in MTEC by either of the following two methods:
 - a. **Frequency Offset (Preferred Approach).** The Balancing Authority may offset its frequency schedule by 0.02 Hz (or other smaller offset designated by the time monitor²), leaving the Frequency Bias Setting normal, or
 - b. **Schedule Offset.** If the frequency schedule cannot be offset, the Balancing Authority may offset its net Interchange Schedule (MW) by an amount equal to the computed bias contribution times the desired frequency offset.
4. **Request for Termination or Halt of Scheduled MTEC.** Any Reliability Coordinator in an Interconnection may request the termination of an MTEC or of the initiation of a scheduled MTEC. A Balancing Authority that has a reliability concern with the execution of an MTEC should notify their Reliability Coordinator to request a termination of the MTEC. A Reliability Coordinator

² Alternative procedures should be approved the NERC OC prior to implementation.

requesting a termination or halt of an MTEC is asked to forward the reasons for requesting the termination to the chairs of the RS and ORS.

General Manual Time Error Correction Practice

Unless local Interconnection procedures prevail, MTECs will last a minimum of 4³ hours unless terminated by a Reliability Coordinator for reliability concerns. Corrections for fast Time Error in the Eastern Interconnection should not be initiated such that they would run during the morning load ramp⁴. Generally, the normal MTEC process is to offset the scheduled frequency by 0.02 Hz, *e.g.*, slow time error is corrected by setting frequency to 60.02 Hz and fast time error is corrected by setting frequency to 59.98 Hz.

³ The minimum 4 hour duration is intended to reduce the likelihood of errors. A 4-hour correction would reduce a 30 second Time Error to approximately 25 seconds.

⁴ Avoiding MTEC initiation for fast Time Error during the morning load ramp reduces the likelihood of low frequency excursions during schedule changes and can preclude a MTEC where load increase would naturally reduce fast Time Error.