

Persistent High Frequency in the Eastern Interconnection

The NERC Resource Subcommittee (RS) monitors the frequency performance of all interconnections subject to NERC regulation and has observed a consistently high frequency in the Eastern Interconnection (EI) since approximately March 2016. This high frequency (60.003 Hz instead of the desired 60 Hz) is caused by excess generation from one or more Balancing Authorities (BA) in the interconnection. It is estimated that this persistent high frequency corresponds to persistent excess generation of approximately 150 to 200 MW – in every hour of every day. After numerous attempts to locate the source of this excess generation by reviewing the available data, the RS has yet to identify the BA(s). It is likely the entities causing this excess generation are not even aware that they are generating more power than they are required to produce causing them to incur unnecessary expenses while at the same time causing negative impacts to the Interconnection. An example of a negative effect is that the additional 3 mHz in every hour of every day causes positive Time Error to accumulate and has therefore required Fast Time Error Corrections to be performed approximately once every three days by all Balancing Authorities in the EI.

There have been a few short term pauses in this high-frequency/excess-generation, with the most recent pause starting at approximately 09:30 December 31, 2020 Eastern Prevailing Time and lasting until approximately 18:00 January 9, 2021. The RS hopes to use these pauses to help identify the source(s) of this high frequency. For instance, because each pause's start and stop seem to occur in step changes, it is likely that there is only one or a few (perhaps coordinated) cause(s). [Table 1.1](#) lists the approximate starts and stops of the pauses that have lasted longer than 2 days. [Figure 1.1](#) provides an accurate illustration of the excess generation.

Table 1.1: Eastern Start and Stop Times

Start	Stop	Duration
December 31, 2020 09:30	January 19, 2021 08:00	18 days 22.5 hours
September 5, 2020 00:00	September 14, 2020 23:00	9 days 23.0 hours
March 2, 2020 00:00	March 4, 2020 19:00	2 days 19.0 hours
April 22, 2019 13:00	May 17, 2019 19:00	25 days 6.0 hours
April 1, 2019 06:30	April 7, 2019 03:00	5 days 20.5 hours
February 14, 2019 10:00	February 24, 2019 12:00	10 days 2.0 hours

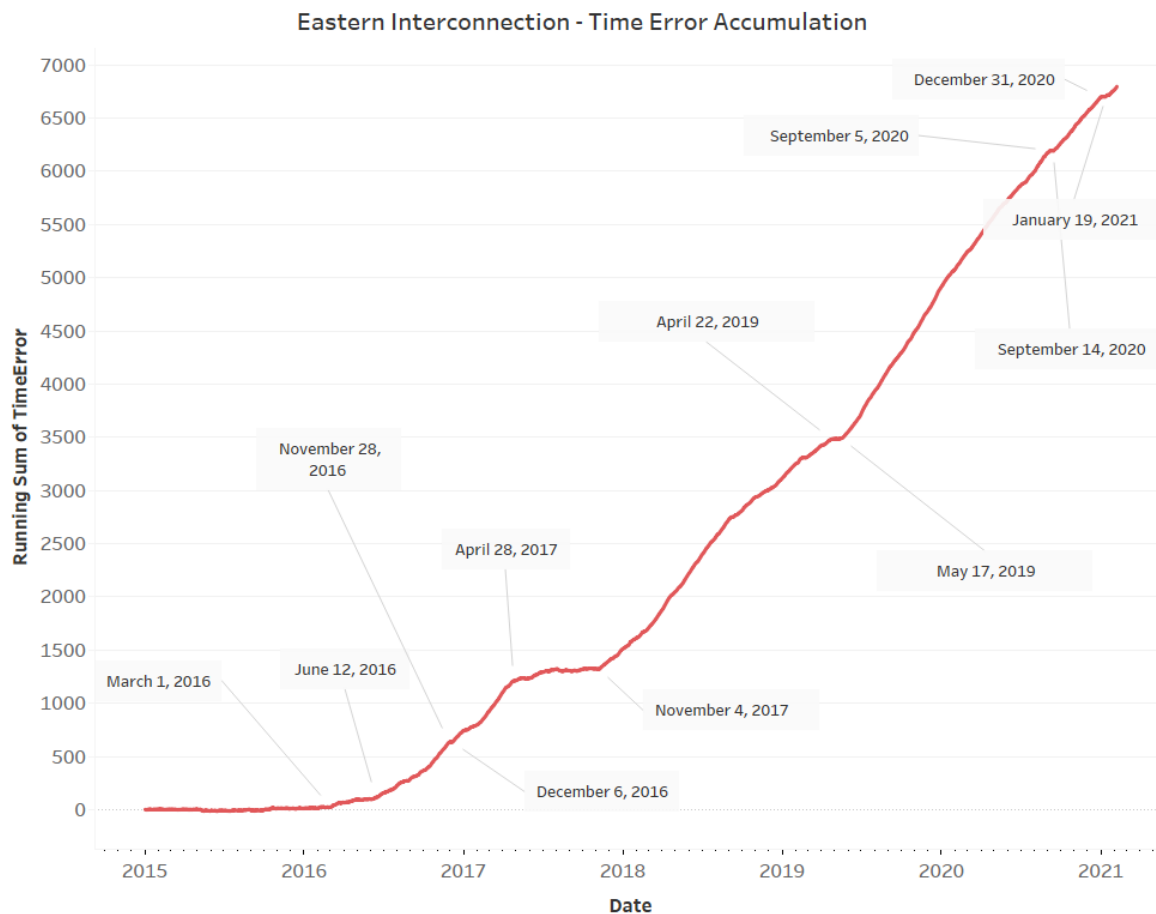


Figure 1.1: Eastern Interconnection – Time Error Accumulations

The RS is asking for your help in identifying the cause(s) of this persistent high frequency in the EI. There are several potential causes including:

1. Unintentional use of meter error component in Balancing Authority's (BA) real-time ACE calculation
2. Additional input to real-time or control ACE for some reason
3. Frequency Device Calibration(applicable to large BA's)
4. Incorrect metered or missing entry of Tieline, Psuedo Tie, Dynamic Schedule in BA EMS
5. Incorrectly metered or accounting for HVdc Tielines, whether internal to BAs or external
6. Difference or sign-error between the values used in real-time balancing in the BA EMS and those used for after the fact check-out/verifications with neighbors – often the actual points in SCADA used for checkout and the ones used for real time operation and ACE calculation are separate values

Of note, it is unlikely that the cause of the high frequency is directly visible in the after the fact BA ACE used for checkout – the RS has investigated this avenue with no concrete results. If your real-time BA ACE is available to you, please do check that the ACE and the components that are used to calculate it are correct (especially that the signs of these values are correct) and the hourly integration of the real-time values match those used in after the fact accounting.

Please respond on or before April 30, 2021 to this request with any information that you have that could be used to help track down the source of the persistent EI high frequency. For any questions that you may have, please contact any of the RS Regional Representative members listed below.

Regional Representative members		
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