



Manual 01 Phasor Language

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3.3.2 Synchrophasor Data Exchange

Synchrophasor data is exchanged between each PJM Member's Synchrophasor System and the PJM Synchrophasor System continuously at a rate of 30 samples per second.

- The phasor data sent continuously from PJM Members to PJM includes the following types of information sent with associated data quality codes:
 - data needed for monitoring generation (Refer to Manual 14D: Generator Operational Requirements, Section 4.3.4)
 - data needed for monitoring transmission, which includes system frequency, positive sequence current and voltage.

- PJM Members are responsible for the accuracy of the data they send to PJM. A maximum of 0.2% overall inaccuracy or loss of data from members to PJM storage devices and user-level applications at PJM is allowed for instantaneous monitored values.

- All data items, regardless of type, are collected and disseminated at a frequency of 30 frames per second and should be sent to PJM with associated data quality codes in compliance with IEEE C37.118 communication standards.

3.2.3 EMS Data Exchange (Billing Metering)

- PJM Members are responsible for the accuracy of the data they send to PJM. A maximum of 2% overall inaccuracy in the repeatability of data from transducers or potential transformers/current transformers (PTs/CTs) is allowed for instantaneous monitored values (see Section 5.2). Hourly MWh readings data must be provided to PJM daily to ensure accurate billing. Regular calibration of PJM Member metering is necessary to keep the data as accurate as possible (see Section 5.3).

5.2.6 General Telemetry

- PJM receives real-time telemetry for many measurements that do not fall into any of the preceding categories in Section 5.2. These measurements may be related to transmission facility telemetry requirements for observability in Manual 03: Transmission Operations and Manual 03A: Energy Management System Model Updates and Quality Assurance, or related to the Interconnection Agreement for a particular facility, or any other operation or market reason to telemeter data to PJM. The requirements for General Telemetry metering systems are:
 - Metering Accuracy: Within $\pm 5\%$ of true value.
 - Scan Frequency: 10 sec. or less between scans

2.3.1 Transmission Monitoring Capability

- **System Availability** The computer hardware and software at each control center shall achieve a long-term 99.95% availability level for those reliability functions directly affecting the successful operation of PJM. Any application that supplies operational data to PJM, accepts generation control signals from PJM, or otherwise links to the real-time operational aspects of the PJM control system is considered vital to reliability. Other applications may be considered to be vital to a PJM Member's operations and therefore, shall also achieve 99.95% availability. Redundant hardware configurations with automatic failover schemes are generally necessary to achieve 99.95% availability.

Potentially divide up the requirements into the following areas:

- Accuracy
- Availability
- Latency
- Good Samples (C37.118 Status Word)