

## Phasor Measurement Unit (PMU) Placement Plan in RTEP Planning Process

### Solution

The Planning Committee (PC) will **approve** the following modifications to M14B:

- **Modification to M14 Appendix B as follows:**

The 5-year plan will specify the level of budget commitments which must be made in order to meet scheduled in-service dates. The commitment may include facility engineering and design, siting and permitting of facilities, **installation or modification of metering system(s) required by Manual 01**, or arrangements to construct transmission enhancements or expansions.

- **Additional language to M14B Section 1.4.1.3:**

Maintaining a safe and reliable Transmission System also requires keeping the transmission system equipment in safe, reliable operating condition as well as addressing actual operational needs. On an ongoing basis, PJM operating and planning personnel assess the PJM transmission development needs based on recent actual operations. This may lead to special studies or programs to address actual system conditions that may not be evident through projections and system modeling.

To ensure that system facilities are maintained and operated to acceptable reliability performance levels, PJM has implemented an Aging Infrastructure Initiative to evaluate appropriate spare transformer levels and optimum equipment replacement or upgrade requirements. This initiative, based on a Probability Risk Assessment (PRA) process, is intended to result in a proactive, PJM-wide approach to assess the risk of facility failures and to mitigate operational and market impacts. Section 2 of this manual provides further discussion of the PRA process.

**Additionally, ensuring adequate Synchrophasor device coverage is needed to support PJM's real-time applications. The PMU Placement Strategy (PPS) identifies the Synchrophasor device coverage needed to support PJM's real-time Synchrophasor applications. The PPS will include placement targets and required operational dates to guide installation plans. The PPS will be periodically reviewed and updated by PJM Operations and will be included in the Operational Performance assessment process.**

The Planning Committee (PC) will **recommend** that the Operating Committee (OC) take the following action:

- Consider and approve the following language in Manual 01:

Document	Section	Language
Manual 01: Control Center and Data Exchange Requirements	3.6	<p><b>Required Synchrophasor Data*:</b></p> <p>Synchrophasor measurement signals are required for the following equipment locations:</p> <ul style="list-style-type: none"> <li>• Bus voltages at 100 kV and above</li> <li>• Line-terminal voltage and current values for transmission lines at 100 kV and above</li> <li>• High-side / low-side voltage and current values for transformers at 100kV and above</li> <li>• Dynamic reactive device power output (SVC, STATCOM, Synchronous Condenser, etc.)</li> </ul> <p>* These requirements shall only apply to new baseline and supplemental projects presented to the TEAC for inclusion in the RTEP after June 1, 2021. In situations where the installation of a Synchrophasor device would cause technical challenges resulting in unusually high installation costs, PJM may approve on a case-by-case basis an alternative Synchrophasor device installation plan proposed by the Transmission Owner or Designated Entity.</p>
Incorporate the <a href="#">PJM PMU Placement Strategy</a> into Manual 01	Attachment F	

- Include the following device configuration and data quality requirements in supporting documents:
  - PMU devices installed per this requirement shall include necessary design and configuration to make the device 'CIP ready'.
  - PMU devices installed per this requirement shall comply to additional data quality requirements stipulated in M01.