

## Comprehensive Evaluation of Phasor Measurement Unit (PMU) Placement Implementation Plan in RTEP Planning Process

### Issue Source

Brought by the Indiana Office of Utility Consumer Counselor in response to PJM's quick fix proposal to add language to Manuals 1 and 14B to expand the deployment of PMU devices in the PJM footprint.

### Issue Content

This work effort is designed to consider changes to the governing documents (e.g. Tariff, Operating Agreement ("OA"), and/or Manual language) to expand the placement of PMUs throughout the PJM footprint. Currently, PJM has implemented a voluntary program for the placement of PMUs throughout the PJM footprint. [PJM PMU Placement Strategy, March 10, 2016] However, PJM has requested action by stakeholders to put in place a mandatory and opportunistic implementation strategy. Stakeholders would like to further explore aspects of the deployment (e.g. cost/benefit analysis, grid security requirements, implementation details, etc.) that can maximize the benefits to customers. In addition, stakeholders would like to better understand the role of states and PJM in developing a grid strategy that maximizes the benefits.

### Key Work Activities and Scope

- Provide further education as needed and available on the reliability improvements (e.g. reduced frequency, duration and extent of outages and faster restoration) that can be obtained from deploying PMUs throughout the PJM region. Recognizing PJM has already provided information throughout the quick fix process about the reliability benefits from installation of PMUs, the education should focus on various levels of deployment and include quantifying the value of the benefits.
- Provide education as available on the resilience benefits that can be obtained from deploying PMUs throughout the PJM region. Recognizing a stakeholder has asked for inclusion of resilience language to the current quick proposal, the education should include efforts to quantify the value of the benefits.
- Examine additional opportunities to leverage the implementation of PMUs. The additional opportunities addressed should include – at a minimum – the following:
  - Curtailment cost benefits (improved network model and analysis);
  - Electronic Balancing System (BES);
  - Avoided grid reinforcement cost;
  - Black start;
  - Volt-Var loss of optimization;
  - Online generator compliance monitoring;
  - Reduced operations and maintenance costs;
  - Reduced energy and ancillary services costs;
  - Improved asset utilization and operational efficiency; and
  - The education should include efforts to quantify the value of the benefits.
- Examine additional opportunities for integration and operation of distributed energy resources. The education should include efforts to quantify the value of the benefits.

- Examine different options for the roll-out of PMUs (e.g. should supplemental projects be included) and why the voluntary 2016 PMU Placement Strategy is not satisfactory.
- Grid security: Examine, provide education on, and effectively address the potential that PMUs will increase exposure to geographically distributed attacks (e.g. cyberattacks on specific sites). (This data security concern was recently raised about synchrophasors during a FERC Notice of Inquiry.)
- Examine the potential inclusion of supplemental projects in the deployment plan – including needed parameters, limitations and expected regulatory oversight.
- Consider, and provide education on, PJM’s ability to receive, manage and utilize that data made available by a broader deployment of PMUs.
- Work completed in the special PC sessions, including the development of a matrix, would be transferred to MRC stakeholder group.

### Expected Deliverables

Any needed implementing Tariff, OA, and Manual language.

### Decision-Making Method

Tier 1, consensus (unanimity) on a single proposal (preferred default option), or Tier 2, multiple alternatives.

### Stakeholder Group Assignment

This work will be assigned to a senior task force reporting to the Markets and Reliability Committee.

### Expected Duration of Work Timeline

Packages and proposals will be reported for a first read by May 31, 2021.

### Charter

*(check one box)*

<input checked="" type="checkbox"/>	This document will serve as the Charter for a new group created by its approval.
<input type="checkbox"/>	This work will be handled in an existing group with its own Charter (and applicable amendments).