



Engineering Analysis Task Team

Matthew Rhodes (SRP) – Co-Lead

Evangelos Farantatos (EPRI) – Co-Lead

NASPI Workgroup Meeting

September 26, 2023

EATT Agenda

- 3:30-3:45 EATT Business
 - Mission Statement
 - IBR Performance Response and Analytics Monitoring
 - EATT Roadmap
- 3:45-4:05 Presentation: Priya Mana (PNNL) - **IBR Synchronphasor Perspective**
- 4:05-4:25 Presentation: Dr. Ebin Cherian Mathew, NLDC (Grid India) - **Application of Synchronphasor for IBR based systems**

EATT Mission Statement

1. Proliferate the development, testing, and validation of engineering applications and data analytical methods that use synchronized measurements systems.
2. Assist in the deployment and utilization of synchronized wide-area measurement applications.
3. Formulate and guide recommended R&D activities related to the advancement of wide-area synchronized measurement systems and their applications.

IBR Performance Response and Analytics Monitoring

- EATT White Paper
 - TF: IBR Performance Response and Analytics Monitoring (IPRAM)
 - Member access through SharePoint
- Lead: Priya Mana (PNNL)

Status: Discussing outline during monthly calls

Looking for contributors!

1. **Need for IBR Monitoring**
 - The unexpectedness of IBR based systems will introduce unknowns.
 - What is normal behavior and what is abnormal behavior (secure vs. unsecure instead – acceptable vs unacceptable)
 - Reported IBR behavior that has impacted system (discovery of how IBR systems are different in their impact to the system. We are creating expectations based on these events)
 - Failure modes and **signature detection (what has been discovered already)**
2. **Grid Codes and Standards** for IBR Performance Requirements
 - IEEE2800
 - NERC IRPS – Guideline Improvements to Interconnection Requirements
 - NERC Alert R-2023-03-14-01 Level 2 – Inverter-Based Resource Performance Issues
 - Grid codes are driven towards non-IBR mimicking.
3. **IBR Functions (inclusive of Grid Forming/Grid Following)** – Commercially available functions only? This chapter leads the discussion of how IBR operational expectations differ from non-IBR generation.
4. **System wide IBR performance monitoring (inclusive of Grid Forming/Grid Following cross system interaction performance)** – Mentioned in chapter 1. And followed up in measurement chapter – how is that measurement monitoring.
5. **Impact of IBRs on grid system protection (Considering new transient response of IBRs)** – Monitoring requirements change for the transient effects on protection systems. How IBRs are behaving during faults and impacts on protection system performance. Focus only on fault behavior?
6. **Analytics (Demonstrated and Theorized)**
 - Prior industry analytics – List of analytics successful for IBR monitoring
7. **Data Pros and Cons:**
 - Data Type (value of each)
 1. PMU
 2. POW
 3. PQ
 - Data Location (value of each)
8. **Data storage parameters for IBRs**
9. **Impact of reverse power flow from Distribution to Transmission (Loop flows between high and low voltage levels)** – Coordinate with DisTT.