# ERCOT ROS Inverter-Based Resource Task Force (IBRTF)

### Scope

The Inverter-Based Resource (IBR) Task Force (IBRTF) is a task force reporting to the Reliability and Operations Subcommittee (ROS).

**Background**

IBRs make up a significant portion of ERCOT Generation Resources today, and are forecasted to rapidly increase even further and become the dominant resource technology on the ERCOT System in the next few years. IBR technology differences may at times necessitate different requirements, testing, and/or performance monitoring to identify and correct performance deficiencies to ensure reliable operations. Several events have occurred in the last 10 years both in ERCOT and other electric grids that highlight the need to address these concerns. Coordination and comprehensive expertise from generation owners/operators, transmission owners/operators, IBR vendors/Original Equipment Manufacturers (OEMs), and ERCOT is needed to properly diagnose and mitigate these issues.

**Membership**

Membership is open to all concerned parties. Participation is encouraged from Transmission and/or Distribution Service Providers (TDSPs), Qualified Scheduling Entities (QSEs), Resource Entities, ERCOT, equipment manufacturers, and other Subject Matter Experts (SMEs) in the IBR field.

ERCOT IBRTF meetings may be held as either open or closed sessions. Open sessions will be open to the public. Closed sessions will be scheduled, as needed, to facilitate the discussion or disclosure of Protected Information and/or other confidential information. Participation in closed sessions is limited to the following Entities: ERCOT, the Public Utility Commission of Texas (PUCT) or other relevant state agencies, North American Electric Reliability Corporation (NERC), Texas Reliability Entity (TRE), QSEs who represent Resources, Resource Entities, TDSPs, manufacturers of inverter-based Resources or related equipment, and relevant industry SMEs. ERCOT, in coordination with the IBRTF chair, will determine whether a manufacturer or SME is qualified to participate in closed sessions. Any participant at open or closed sessions must comply with the terms of the Antitrust Admonition.

Any prospective member who seeks to participate in closed sessions must sign the appropriate ERCOT Confidentiality Agreement (CA) or Non-Disclosure Agreement (NDA) and receive approval from ERCOT. To facilitate this process, prospective members must email the ERCOT Legal department at NDA@ercot.com.

Management of the membership list shall be the responsibility of ERCOT and coordinated with the IBRTF chair. Once approved, members who have executed the requisite NDA will be permitted to access the IBRTF email distribution list, to access appropriate ERCOT Secure Documents Library, and to attend IBRTF meetings.

**Chair and Vice-Chair**

The Chair and Vice-Chair positions shall be nominated by the IBRTF for approval by ROS to a term not to exceed 12 months, on a one year, rolling basis.

The Vice-Chair shall act as Chair in the absence of the Chair.

**Meetings**

The IBRTF shall meet as often as necessary to perform their duties and functions.

All IBRTF meetings shall be called by the Chair and/or Vice-Chair and all such meeting notices shall be sent and posted to the ERCOT website at least one week prior to the meeting. IBRTF meetings will be communicated via IBRTF email distribution list.

The Chair shall preside at all meetings and is responsible for preparation of agendas for such meetings which will be posted to the ERCOT website in advance of the meeting. In the absence of the Chair and the Vice-Chair, the group shall select another IBRTF member to preside at the meeting. The Chair, or the presiding member, shall be guided by input from the membership in the conduct of the meetings.

Notes of IBRTF meetings shall be recorded and distributed, along with other communications to all members of the IBRTF. Additionally, such information will be posted on the ERCOT website as authorized by the IBRTF and author of document.

**Purpose & Scope**

The purpose of the IBRTF is to assess, review, and recommend improvements and mitigation activities to support IBR performance that is specific to inverter-based technologies. Functions of the IBRTF include:

* Respond to assignments from the ROS.
* Review ERCOT Nodal Protocols, Operating Guides and Planning Guides for alignment with Institute of Electrical and Electronics Engineers (IEEE) Standards and North American Electric Reliability Corporation (NERC) Reliability Standard requirements, Alerts, Guidelines, Event reports and recommendations to make Working Group assignment or scope change recommendations to ROS.
* Assess and review known specific inverter and plant controller setting and modeling issues for potentially common issues with other units that have the same IBR vendor/OEM and/or inverter model and make Working Group assignments or scope change. Support other ROS Working Groups to validate models based on actual system performance observed during events.
* If no appropriate Working Group exists to review a topic related to IBRs, make recommendations to ROS on how to resolve the issue related to the topic.
* Review emergency events having a significant impact on the ERCOT System and make recommendations to ROS.
* Develop a post disturbance procedure to follow up with an IBR where performance did not meet ERCOT protocol requirements .
* Assess and review high resolution data collection available (e.g. Digital Fault Recorder (DFR), Phaser Measurement Unit (PMU), inverter oscillography, digital relays) to create a guideline for ideal placements within a unit (e.g. inverter, low/high side of Generator Step-Up (GSU)), and recommend additional locations on the ERCOT System, settings/triggers, etc. to support troubleshooting needs.
* Review ERCOT Generation or Modification Interconnection (GIM) process and determine if any changes are needed to address known IBR issues.
* Assess IBR protection schemes that are not explicitly included in their positive sequence or EMT models.
* Review IBR Low Sustainable Limit (LSL) determination processes to determine if additional guidelines, tests, or requirements are needed.
* Assess the risk of another large scale IBR trip or power output reduction event in a concentrated area with respect to ERCOTs Most Severe Single Contingency (MSSC) and the potential need to reevaluate contingency operating reserves.
* Evaluate ERCOT Staff and outside resource needs to address IBR risk mitigation activities. Including but not limited to broad ERCOT system model validation and post event evaluation of dynamic model accuracy of models provided to ERCOT.
* Communicate potential reliability risk to ROS.
* Support any necessary technical workshops.
* Evaluate and recommend if a standing IBR Working Group is needed.