



Transient Security Assessment Tool (TSAT) Update

ERCOT Operation Stability Analysis

April 26, 2023

Resource Integration Workshop

RRGRR-021 - Background

- RRGRR021 added new dynamic model/data requirements to the Resource Registration Glossary needed for real-time TSAT implementation
- RRGRR-021
 - Approved by TAC on Feb. 28, 2020
 - Effective as of August 1, 2020

Resource Entities and TSPs - TSAT Requirement

- As of August 2020, all existing and new generation resources are required to submit the TSAT dynamic models for ERCOT operations model.
- Resource Entities are required to review their existing PSSE user defined models for IRRs and submit TSAT user defined dynamic models (if needed)
- TSPs are required to review the PSSE user defined models for existing transmission equipment's (Dynamic reactive devices etc.) and submit TSAT dynamic models (if needed)
- New GR and SOG connecting to ERCOT Transmission Grid on or after August 1, 2020 will have to submit dynamic models for both PSSE and TSAT

PGRR102

- PGRR102 added a requirement for Resource Entities and Interconnecting Entities (IEs) to provide operations dynamic model quality test results that demonstrate appropriate performance for submitted operations dynamic models
- Improves dynamic model quality in alignment with Reliability and Operations Subcommittee (ROS) goals
- PGRR102
 - Approved by PUCT on March 23, 2023
 - Effective as of April 1, 2023

TSAT Model Quality Test (MQT)

- TSAT MQT is required for new QSA units (starting with **May 1st QSA**)
- TSAT MQT is required for any PSS/E or TSAT model update associated with the existing units (starting from 4/1/2023)
- TSAT MQT required tests are the same as PSS/e
 - Flat Start, Small & large voltage disturbance, Small frequency disturbance, System strength (only for IBRs)
 - The details will be included in the DWG Procedure Manual
- Plots of PSS/E, TSAT, and PSCAD MQT results should be overlaid onto the same plot axis for comparison
- TSAT MQT is currently only required for TSAT User Defined Model (UDM). ERCOT may request TSAT MQT for non TSAT UDM if needed

TSAT UDM Requirements

- Some requirements of TSAT UDM
 - TSAT UDM must interoperate with the PSS/E dyr files
 - TSAT model packages must be submitted together with the PSSE model package
 - TSAT model package (including .raw, .dyr, .dll, and .tudm files) set up based on the bus number that aligns with bus numbers in the PSS/E model package
 - TSAT model package (including .pfb, .dyr, .dll, and .tudm files) set up based on the **Equipment Names**
- Refer to ERCOT Dynamic Model Submittal Guideline V1.6 (April 2023) for the detailed TSAT UDM requirements, available at:
https://www.ercot.com/files/docs/2021/04/20/Model_Quality_Guide.zip