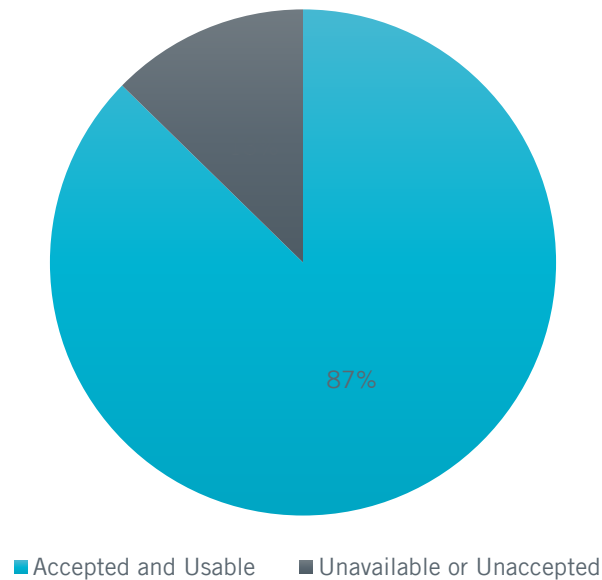# Transient Security Assessment Tool (TSAT) Update

ERCOT Operation Stability Analysis

May 4, 2023
ROS Meeting

TSAT Model Submittal and Review Update

- 87% of transmission connected IBRs TSAT dynamic models are available (accepted and usable)

Transmission Connected IBRs (Wind/Solar/Battery) TSAT
Dynamic Model Availability

87%

■ Accepted and Usable ■ Unavailable or Unaccepted

UDMs Summary and Update (as of April 2023)

No.	Accepted and Usable Models	OEM
1	CDVAR5U1	AMSC
2	GMD042101	Gamesa
3	GMD042101b	Gamesa
4	GMD042103b	Gamesa
5	GMD042104B	Gamesa
6	SGG010100	Gamesa
7	SGG0201CY	Gamesa
8	GELV5G1	GE
9	GEWTG0705	GE
10	ING1BJ0	INGE
11	PEGEN_HM1008_1A	PowerElectronics
12	PEGEN_HM1008_1b	PowerElectronics
13	BESTESBL201_1	Tesla

No.	Unavailable or Unaccepted Models	OEM
1	SMASC	SMA
2	BESTES137_1	Tesla
3	CP200652101	Vestas
4	CP200652300	Vestas
5	CP200653400	Vestas
6	CP200660000	Vestas
7	CP200660400	Vestas
8	CP200660501	Vestas
9	VC18084901	Vestas
10	VC200452101	Vestas
11	VC200453400	Vestas
12	VS170960501	Vestas
13	VS200453400	Vestas
14	VS200460500	Vestas
15	VS3102	Vestas
14	*CP200660602	Vestas
15	*CP200660603	Vestas
16	*FL200460602	Vestas
17	*VC200460602	Vestas
18	*VS170960602	Vestas
19	*VS170960603	Vestas
20	*VS200460602	Vestas
21	*VS200460603	Vestas

*Models do NOT work with equipment names that have a whitespace character

TSAT Dynamic Model Submittal and Expectation

- TSAT dynamic model is accepted if all the following are met,
    - PSSE model is accepted
    - Dynamic model type (generic or UDM), dyr file format and parameters are the same as PSSE models
    - TSAT model performance matches the PSSE model performance as demonstrated in the TSAT MQT (if required)
    - **TSAT model can accept equipment name which is needed for online application**
    - **Provide sufficient auxiliary files, e.g., .dll, .tudm, user manual, dyr file with equipment name, needed for TSAT UDM models and application**

PGRR102 Dynamic Operation Model Improvement

- 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

PGRR102 Dynamic Operation Model Improvement

- 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

- **TSAT MQT is currently only required for TSAT User Defined Model (UDM). ERCOT may request TSAT MQT for non TSAT UDM if needed**

Status Update

#	Task	Notes	Progress and Tentative Schedule
1	TSAT Model Update and Availability	~87% of IBRs with accepted TSAT models	Ongoing
2	Offline TSAT Scenarios Set Up and Testing	16 GTCs including 7 GTCs that don't have TSAT models for the IBRs in the study area (within and close to the interface). TSAT model availability for these 7 GTCs: • McCamey: 94% • Bearkat GTC: 75% • Panhandle GTC: 77% • West Texas Export GTC: 81% • Valley Export GTC, Nelson Sharpe Rio Hondo GTC, and North Edinburg Lobo GTC: 78%	Ongoing
3	EMS Testing Environment	Set up the TSAT scenarios for the potential GTCs and identify the adjustments/improvement needs	Ongoing
4	EMS Operational Environment		TBD
5	Online TSAT		TBD

• The schedule will be revised as needed, depends on the testing and finding at each stage
• May not have all the GTCs implemented initially

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