Accurate Dynamic Models and Submission Requirements in the Interconnection Process

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Key Points

- **ERCOT has observed models submitted for FIS and QSA with unrealistic assumptions** (e.g. PPC controller)
  - E.g., very high reactive gains and zero communication delay
  - PPC vendor selected after QSA, and only during commissioning was a realistic model provided to ERCOT
  - This could lead to 'as-built' models exhibiting significantly different MQT response, which may in turn delay IE's commissioning schedule.

- **A REMINDER TO ALL IEs / REs:**
  - All model submissions should be REASONABLE and as ACCURATE as possible per Planning Guide 5.3, 6.2(5), 6.2.1, and DWG Procedure Manual 3.2
  - The IE/REs is required to notify both ERCOT and the TSP of any changes for review after the FIS has been completed, in accordance with Planning Guide 5.3.2.5(9).
  - IEs must submit an updated model promptly whenever changes occur (e.g., a change to the PPC model prior to Energization, Part 1), rather than waiting until the PGRR-109 submission. Failure to do so is a compliance violation. Per Planning Guide Section 6.2.1, updated models are required within 30 days of completing a field adjustment.
  - IEs must declare PPC vendor / model assumed for FIS studies
    - Changing the PPC vendor / model may result in FIS restudy per Planning Guide 5.3.2.5(9)
    - PPC vendor / model must be filled out in **dynamic model Template**
    - Dynamic model should be accurate per vendor and have reasonable communication delay assumptions between measurement pickups and PPC and inverters

- **ERCOT has observed AVR tuning during Part 2 that compromises MQT performance** Recommend REs study AVR and PFR performance in simulation prior to synchronization to confirm that planned settings will be able to pass AVR and PFR tests and avoid excessive retuning
  - Technicians adjusting field settings should do so in consultation with IE/RE's dynamic model engineer
    - ERCOT has observed cases where technicians modify the Qlimits of the field equipment which then causes the facility to fail MQT (for example, trip on the VRT test or compromise real power capability)

Summary – For a Smoother Interconnection Process…

- ✓ Select and report PPC vendor and model number during the interconnection process
- ✓ Submit REASONABLE and ACCURATE models promptly throughout the interconnection process
  - ✓ Always submit models both to ERCOT and your interconnecting TSP per Planning Guide 6.2, 6.2.1 and DWG PM 3.2.2
- ✓ Check AVR / PFR performance in simulation prior to commissioning
  - ✓ Ensure that planned settings will not only pass AVR / PFR requirements but also pass MQT requirements
  - ✓ Inform field technician that they should not tune parameters—especially Qlimits—without consulting with IE/RE's dynamic modeling engineer for the facility

The new Dynamic Model Templates have several questions which must be completed (this was announced at April RIWG)

Do the main transformers have on-load tap changers (OLTC)?	(Make Selection)
IBRs, What is the OEM and model # of your Power Plant Controller (PPC)?	
IBRs, what is the firmware version and date of the PPC? (required for PVR)	

Thank You!

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