



Subsynchronous Ferroresonance, New Dynamic Model Templates

and

Declaring Power Plant Controllers Assumed in Studies

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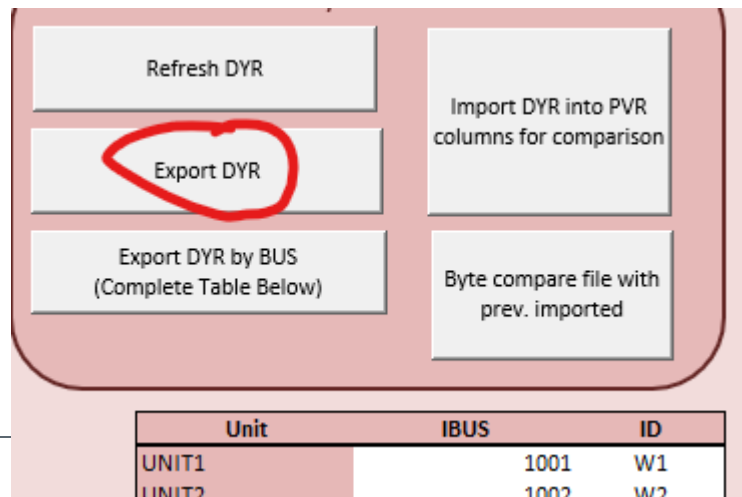
Subsynchronous Ferroresonance (SSFR)

- SSFR: Interaction between series capacitor and main power transformer (MPT)
 - Becoming a significant issue as projects locate close to series capacitors and utilize MPTs with low saturation characteristic
- Best Practices:
 - Complete SSR studies earlier
 - Consider purchasing an MPT with a higher saturation knee point (e.g., over 1.2 per-unit)
- SSFR is difficult to resolve if the transformers have already been purchased
 - Tripping the transformers could place the project out of compliance with Voltage Ride Through requirements in Nodal Operating Guide 2.9
 - Voltage arrestors (MOVs) can sometimes help

Dynamic Model Templates

- The new “Universal” dynamic model Template was introduced at 12/19/2024 RIWG.
 - Appears to be working well.
- **New Template will be required for all model submissions after June 1, 2025**
 - New Template posted here: <https://www.ercot.com/services/rq/re>
 - Please complete all sections on the Start page
 - New Template will read a .dyr file from your OEM or consultant. It will also read a .dyr file exported by your old Template
 - To export a .dyr file, use the button in the rose-colored area on the Home page (see below picture)
- Issues? Email dynamicmodels@ercot.com with “**Template Issue**” in the subject line.

You can easily export the .dyr models from your old Template and import into the new Template.



Power Plant Controller (PPC)

ISSUE:

- ERCOT has observed significant difference between the “as-built” model performance versus model assumed in FIS / QSA studies
 - Change in PPC appears to be a leading cause. “As built” PPC sometimes less capable than initially assumed, for example, some PPCs appear unable to meet MQT performance requirements
 - Potential compliance issue and project delay due to substantial changes not reported in a timely manner, which may trigger a restudy of the FIS and QSA processes [Planning Guide Section 5.3.2.5(9)]

SOLUTION:

- IEs/REs required to report hardware changes with a new model [PG 6.2(6)] within 30 days [PG 6.2.1(2)]
- **Starting April 21, ERCOT will require reporting of PPC make and model number whenever a dynamic model is provided.**
 - This is already required reporting for the turbines/inverters OEM.
 - Answering “**Undecided**” is allowed, however note:
 - Please update your models as soon as equipment is known so ERCOT/TSPs can decide if restudy is needed
 - Aligns with current practice when changing wind turbines or changing solar inverters
 - Fill in answer in the new Dynamic Model Templates (picture below) and mention in MQT report
 - If using an old Template, place note in the comments box.
 - TSPs, please indicate PPC assumption in FIS stability study reports

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!

dynamicmodels@ercot.com

(If inquiring about the Template, include the phrase
“*Template Issue*” in the email subject line.)