

MOD-026 & MOD-027 Update

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MOD-026-1 & MOD-027-1

- MOD-026-1
 - Verification of Models and Data for Generator Excitation Control System or Plant Volt/Var Control Functions
- MOD-027-1
 - Verification of Models and Data for Turbine/Governor and Load Control or Active Power/Frequency Control Functions

Schedule

- Both standards are currently in effect
 - BPA has ten years to be fully compliant (WECC is trying for a 5 year variance)
 - By January 1st 2018, BPA needs to be 30% complete
 - Generators have 90 days to respond to a written request by BPA to be compliant with the standard.
 - Must re-validate every 5 years

Request Letter

- Letter – background, due date, identified generating project(s)
- WECC Generating Unit Model Validation Policy
- WECC Wind Plant Modeling Validation Guidelines
- WECC Gen Facility Testing and Model Validation Requirements
- WECC Approved Dynamic Model Library
- MOD-026 & MOD-027 Data Request

Data Request

- Principal one-line electrical diagram of the generating facility
- Generator Data
 - Synchronous Generator Data
 - Non-Synchronous Generator Data
- Generator Excitation System or Reactive Power Control Data
 - Synchronous Exciter and Voltage Regulator
 - Non-Synchronous Generator Reactive Power Control Data
- Line Drop Compensation/Reactive Current Compensation
- Power System Stabilizer
- Over-Excitation Limiter (OEL)
- Under-Excitation Limiter (UEL)
- Stator Current Limiter
- High Voltage Bus Controllers, VAR limiters and Power factor controllers
 - Synchronous Generator Reactive Capability and 'V' Curves
 - Non-Synchronous Generator Reactive Capability Curves
- Turbine-Governor (or Frequency Control) Data

Data Request – cont'd

- Power Plant Controls
- Load or MW controller
- Reactive Power Controller
- Transformers
- Transformer Data
- Transformer(s) between Collector and Generator
- Line Data
- Transmission Line Data
- Collector System Equivalence
- Auxiliary Load

Turbine Types

- GE Turbines – modeled in GE PSLF
 - Siemens Turbines – WECC just received manufacturer data – will try to develop and validate a model
 - Vestas Turbines – have a manufacturer-defined model in GE PSLF – seems to work ok.
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- **STILL NEED TO TEST OR VALIDATE WITH PMU DATA**

BPA's Strategy

- Focus on GE Turbines in locations with PMU's first
- Then move on to Vestas and Siemens turbines in locations with PMU's
- Then do locations without PMU's – these will have to be tested

Resources

- Stay tuned for possible training announcements from WECC
- WECC pool of contractors?
- BPA has mobile testing gear for generators

Questions

