ACTIVE TRANSMISSION SYSTEM MODELS AND MODELING PRIORITIES

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AKNOWLEDGMENTS

What is being discussed here is the work being done by the Active Transmission System Modeling (ATSM) Adhoc group, and the Renewable Energy Modeling (REM) Adhoc group within WECC MVS. Many have contributed as well as constant feedback from the wider MVS group. Below are the main contributing entities. We apologies for any inadvertent omissions.

BPA, EPRI, GE, LADWP, MEPPI, NextEra Energy, PEACE®, PGE, PowerTech Labs, PowerWorld, Siemens PTI, WECC

ATSM ADHOC GROUP ITEMS

- **PDCI** – a generic version using *chvdc2* has been developed by BPA (and benchmarked by BPA against their internal detailed OEM user-written model) and shown to be "reasonable" for use in the WECC base case development process
  - The purpose of the generic model is to allow ease of base case conversion across the multiple software platforms
  - Where the detailed user-written model is needed, BPA should be contacted for access and use
- **IPP** – perhaps moving now; Amanuel Selassie, LADW to give an update shortly.
- **Hybrid-STATCOM** – SVSMO4: model spec and user-written demo version developed many years ago (2020). Sought feedback from four (4) vendors and all of MVS. Got minimal feedback and addressed all those comments. Model waiting on the priority list.

ATSM ADHOC GROUP ITEMS

- **VSC-HVDC model**:
  - *vhvdc1* approved several years back
  - NextEra Energy, working with MEPPI, used the model to model Transbay cable and benchmark it with the vendor-specific user-written model (and PSCAD model) for Transbay → they made some very thoughtful and useful recommendation for changes to remove limitations of the model
  - Thus, a proposal set of changes defined to create a ***vhvdc2*** model; this is waiting on the models priority list
  - EPRI has now developed a specification for ***vhvdc3*** model (based off of ***vhvdc1*** and ***2***), which extends it to:
    - Allow for GFM controls at one end of the HVDC line
    - Add a dc-chopper
    - Allow for GFL on both ends with a voltage source representation

MODEL PRIORITIES

- *VHVDC2 (1)*
- IBR Controls – *REEC_E (benchmarking) (2)*
- EV model and Data Center Model *(3)*
- *VHVDC3 – still being developed (4)*
- *SVSMO4 (5)*
- *SCMOV – in GE PSLF™ only presently; (approved spec)(6)*
- *Multi-terminal VSC-HVDC – presented some time ago by PTE Inc. back in 2021/2022 – needs power flow structural changes (7)*