



Modelling tools and model validation practices to support high penetration of inverter-based resources

SC B4

PS1/ Question 1.2:

- 1) What is the experience of IBR modeling with regards to detailed models in power systems with a massive presence of IBR?
- 2) What model validation process do TSOs and ISOs, etc. use to approve these models? Are these models being used to study the integration of new nearby IBRs?

Babak Badrzadeh, Australia

Modelling tools for systems with high-share of inverter-based resources

Phasor domain transients (PDT) (aka RMS)

Electromagnetic transients (EMT)

Suitable for single plant instability analysis

Access to wide-area models

Simulation time

Suitable for single plant instability analysis

Access to wide-area models

Simulation time

Suitable for control interaction studies

Maturity of grid-forming inverter models

Access to control system parameters

Suitable for control interaction studies

Maturity of grid-forming inverter models

Access to control system parameters

Group Discussion Meeting

- Vendor-specific site-specific EMT models are used for generator connection and operational studies.
- Generic EMT models are becoming important for long-term system planning.

Current end-to-end connection process including model validation

