

PARTICIPANT MODELLING DATA (DRAFT) JOINT PRESENTATION FROM THE PUO AND AEMO

August 2017

TIMING OF WEM RULE CHANGES



- Participant Modelling Data rule change undertaken separately to, and after, GIA Capacity Certification rule change and Deferral of Reserve Capacity Timelines rule change.
 - The Public Utilities Office was provided with clear guidance from the Office of the Minister for Energy to prioritise arrangements to facilitate connection of new generators under the GIA solution and ensure GIA generators able to participate in the capacity market.
- The rule changes (although related) addressed separate matters - Participant Modelling Data rule change effectively completes transfer of System Management functions from IMO to AEMO.
 - Principles followed in development of the rule change with AEMO was to maintain consistency of obligations on, and implications for, market participants as prescribed under the Market Rules and Technical Rules.
 - Outside of the broader System Management requirements, the rule change also required to facilitate development of the GIA tool.
- Limited options for quick progression of rule changes to meet the above requirements.
 - Unclear if Participant Modelling Data rule change could be fast-tracked.
 - Not aware of Minister's desire to extend temporary rule-making powers during development of the rule change.

Why does AEMO need modelling information:

- The ability to assess how the power system responds to various contingency and disturbance events
- The ability to assess how modifications to the power system affect its overall performance
 - Including augmentations to the network
 - Elements being removed from the network
 - New generation connections
 - Generation connections being removed/de-commissioned
- The ability to assess how changes in demand profile (and the make-up of demand) impact the performance of the power system
- To aid in determining future ancillary service requirements
- To aid in identifying methods, contingency plans and mitigation strategies for operating the power system

CURRENT TECHNICAL RULE ARRANGEMENTS



Relevant Technical Rules clauses (paraphrased):

TR4.1.2

- Western Power or System Management may request network *users* with equipment connected to the transmission system to conduct tests to demonstrate compliance with the Technical Rules (e.g. generator performance standards)
- A report must be submitted by the network *user* to Western Power or System Management demonstrating the results of the tests *within a reasonable period*
- Western Power may also monitor the performance of network *users* by installing monitoring devices to be read and recorded by the network *user*
- If monitoring demonstrates an issue with TR compliance, the *user* must promptly advise Western Power, identify remedial steps, undertake remedial actions and conduct further tests to demonstrate compliance

CURRENT TECHNICAL RULE ARRANGEMENTS



Relevant Technical Rules clauses (paraphrased):

TR4.1.3

- Generators must provide evidence to Western Power that each generating unit complies with the Technical Rules prior to commencing commercial operation, and must conduct tests to verify and provide information and data necessary for computer model validation
- Tests must only be performed after the machines have been tested and certified by a Chartered Professional Engineer and calibrated, tuned, etc and all final settings have been provided to Western Power
- All test results and relevant final information (including settings and block diagrams) must be provided to Western Power within 10 business days after the completion of the tests
- A generator must work with Western Power to instigate a compliance monitoring program following commissioning to demonstrate ongoing TR compliance
- If the generator observes a TR non-compliance the generator must notify Western Power, and if relevant System Management and advise remedial steps, undertake remedial actions and conduct further tests to demonstrate TR compliance
- If Western Power or System Management has reason to believe the generator does not meet TR requirements, including where there is no evidence to support this (e.g. inadequate modelling information) Western Power or System Management may direct the generator to operate in a specific way
- Generators must maintain records for a minimum of 7 years of all technical performance and monitoring

INTERACTION WITH THE NEW MODELLING RULES



The new modelling rules are primarily intended to allow AEMO to have access to modelling data collected by Western Power under existing powers in the Technical Rules.

The intent was not to duplicate model management responsibilities, in order to maintain a centralised repository and compliance regime with Western Power.

Changes are in line with existing TR mechanisms, and seek to support them by aligning WEM rule terminology with TR terminology.

INTERACTION WITH EXISTING WEM RULES



Relevant Market Rules clauses (paraphrased):

- Market Participants must submit Commissioning Test Plans for any Technical Rules compliance testing **[MR3.21A]**
- In approving the Commissioning Test Plan, AEMO must ensure the SWIS will remain operating within the Technical Envelope **[MR7.6, MR3.2.5]**

For the above, AEMO relies on modelling information provided to Western Power in order to assess the risk. In practice this is linked to the processes described in **TR4.1.2** and **TR4.1.3** on the earlier slides.

- If an issue is identified with the operation of a generator when conducting a Commissioning Test (or identified through other observation), AEMO may constrain the operation of the generator to ensure the SWIS remains operating within the Technical Envelope **[MR7.6]**
- If a generator is constrained for this purpose and it is not already on an outage, then it may be classified as a Forced Outage **[MR3.21.1]**

Commissioning of a new generator

- New generators often have settings that require tuning before entering commercial operation. In order to do this, they require to run actively to test and confirm the tuning parameters.
- Usually this is well before “commercial” operation, and so any resulting constrained operation would be before reserve capacity obligations have taken effect.
- Participants are often required to provide modelling details to Western Power well in advance of this as part of their connection agreement
- Western Power assess the model for any likely constraints well ahead of any actual running and work with the participant to address modelling problems prior to commissioning
- Western Power also often witness the testing, and where issues are identified notify AEMO of any resulting constraints while they work with the participant to resolve the issue

Commissioning after a major equipment change

- Large scale maintenance (e.g. AVR replacement) would typically require a Commissioning Test Plan to demonstrate that the facility is still compliant with its obligations under the Technical Rules
- Commissioning is generally conducted at the tail end of the outage, so often the facility is still on a Planned Outage when conducting these tests
- Participants are required to provide any updated modelling details to Western Power in advance of commissioning
- Western Power assess the model for any likely constraints ahead of commissioning and work with the participant to address modelling problems prior to commissioning
- Western Power also often witness the testing, and where issues are identified notify AEMO of any resulting constraints while they work with the participant to resolve the issue
- If the Participant is still on the Planned Outage during this process, then there is no implication for reserve capacity

Identification of a new security issue while in service

- Sometimes disturbances on the power system result in instable generator operation. When this is observed, generally there is an investigation performed by Western Power examining fault recorder data and available models to understand the cause.
- In many cases, Western Power will identify the issue through the normal compliance monitoring and investigation processes. However where AEMO observes an issue, AEMO may also request Western Power to investigate the issue
- Western Power may provide information to AEMO on new or revised Security Limits that AEMO must subsequently take into account, which may result in constraining generators under certain circumstances to prevent instability from occurring. If the generator is not already on an outage, this may result in a Forced Outage for the participant, however in practice many of the Security Limits that occur in this manner result in a different way of running the facility (e.g. different mode) or an avoidance of certain things operating in parallel (e.g. particular network outages in conjunction with generators operating in certain regions)
- Participants work with Western Power to resolve the issue with their plant, and provide any updated modelling details to Western Power during the process. Often Participants will take Planned Outages on their plant to resolve the issue.
- Once the issue has been resolved, the Participant works with Western Power to demonstrate compliance with the Technical Rules and adequacy of the model (this also usually requires a Commissioning Test Plan to be submitted to AEMO)

Incorrect modelling (not security related)

- On occasion disturbances on the power system result in unexpected behaviour by generation plant, that does not result in generator instability. When this is observed, generally Western Power will examine the available data and request a models revision from the Participant.
- In many cases, Western Power will identify the issue through the normal compliance monitoring and investigation processes. However where AEMO observes an issue, AEMO may also request Western Power to investigate the issue
- If the issue does not result in instable operation (or other security issues) it is very unlikely that there would be any constrained operation on the generator
- Participants work with Western Power to resolve the modelling issues with their plant, and provide any updated modelling details to Western Power during the process
- Once the modelling issue has been resolved, the Participant works with Western Power to demonstrate compliance with the Technical Rules and adequacy of the model (this also usually requires a Commissioning Test Plan to be submitted to AEMO)

System Management Confidential

Modelling data provided to Western Power often contains commercially sensitive information. Western Power take measures to avoid disclosing this information to other parties, and AEMO must also take similar measures to avoid this.

For this purpose the modelling information has been classified as System Management Confidential which prevents System Management from sharing commercially sensitive information from one Participant with other Participants.

Western Power continues to hold the original modelling information, and remains free to share that information with the Participants that supplied it in exactly the same way.

Power System Operating Procedures

AEMO is currently revising its Power System Operating Procedures, and one on the list of procedures to be revised is the Commissioning and Testing PSOP.

AEMO would propose to add some further detail in this PSOP around the coordination of activities between Western Power and AEMO when planning, assessing, approving and conducting Commissioning Tests.

AEMO is also reviewing the Dispatch PSOP, there may be benefit in including an item in here around constrained operation as a result of testing or modelling.

Each of these procedures will be taken through a consultative process, and also through the MAC procedures working group, we would encourage any feedback during this process.