



PSOWG – WEM FOS

Autonomous Islands

Goal

Intent:

To provide some clarity, the intent of the following recommendations is to ensure:

- The WEM FOS does not place unrealistic and onerous restrictions on the operation of a sub-island within the SWIS (e.g. North Country Region or Eastern Goldfields Region), but still provide some level of standard that should apply
- To provide a way of sub-categorising islands within the SWIS into an additional category for which the WEM FOS does not apply at all, e.g. for the purposes of microgrid operation or self-sustained island operation

This will help in ensuring that:

- There is clarity on what the WEM FOS applies to; and
- There is clarity within other parts of the market that reference the WEM FOS as to what else may not apply (e.g. Ancillary Service provision within a microgrid)

Embedded Networks

We definitely know that we do not want “embedded networks”, i.e. those small micro-systems that are capable of disconnecting from the grid and running themselves, but that are not operated by WP or AEMO, from automatically attracting the FOS under the WEM rules (although the same FOS could apply via alternative instruments).

- If we construct a definition of these things, we can automatically “exclude” them from the FOS
- The NEM has a definition of “embedded network” which may be useful:

embedded network

A distribution system, connected at a parent connection point to either a distribution system or transmission system that forms part of the national grid, and which is owned, controlled or operated by a person who is not a Network Service Provider.

- Possible modification for the WEM Rules for use with the FOS (note WP naming suggestion was also Embedded Network, suggested name is to allow this term to be used elsewhere later if need be):

Embedded System means a distribution system or transmission system, connected at a connection point to a Network that forms part of the SWIS, and which is owned, controlled or operated by a person who is not a Network Operator or AEMO.

Autonomous Islands

We also want to separate out “special” islands that are not operated by AEMO, and that we don’t want the FOS to apply to.

- Now that embedded networks are excluded, if we construct a second definition for “autonomous islands” that captures these other situations we can use this within the FOS definitions to exclude them also:

Disconnected Microgrid: means a part of the SWIS that is not an Embedded System, is designed to be separated from the SWIS at a particular connection point (or connection points) on a Network, that has separated from the SWIS and is being operated independently from the rest of the SWIS by a Network Operator

(attempting to align with WP proposed naming)

- Once we have these we can ensure that the Island definition excludes these:

Island: means a part of the SWIS, excluding Embedded Systems and Disconnected Microgrids that includes generation systems (or other energy sources), Networks and Load, for which all of its alternating current network connections with other parts of the SWIS have been disconnected, provided that the part:

- is smaller than the rest of the SWIS that it has disconnected from, i.e. does not include more generation (or other energy sources) and load (determined by on-line quantities before disconnection); and
- contains active generation (or other energy sources) capable of supplying the load within the part of the SWIS that has been disconnected.

WEM FOS

- When creating the FOS itself, the commencing wording would be:

For the purposes of the Wholesale Electricity Market (WEM) Rules, except during a System Restart the Frequency Operating Standards, for the operation of the SWIS (excluding Islands) are:

- And for the Island FOS, the wording would be:

For the purposes of the Wholesale Electricity Market (WEM) Rules, except during a System Restart the Frequency Operating Standards, for the operation of an Island are:

- The only requirement on WP would be to identify:
 - The connection points of Disconnectable Microgrids (e.g. Kalbarri, Ravensthorpe, etc)
 - Perhaps a short description of the operating arrangements (e.g. WP manages, WP has a contract to manage, etc)
 - And perhaps in the Technical Rules have some kind of basic frequency standard that would apply in these areas (could still be linked to the WEM Island FOS if appropriate)

Examples

- Some examples are listed below:

Example	Classification	Outcome
The metropolitan area	Interconnected part of the SWIS	Would attract the full WEM FOS
Albany	Interconnected part of the SWIS	Would attract the full WEM FOS
The Eastern Goldfields with the 220kV line connected	Interconnected part of the SWIS	Would attract the full WEM FOS
The Eastern Goldfields with the 220kV line disconnected	Not interconnected with the SWIS, but an Island of the SWIS operated by AEMO (could be reclassified as a "Disconnected Microgrid" e.g. under a change of operator)	Would attract the WEM Island FOS
Kalbarri when disconnected and running on its own	Not operated by AEMO, but operated by Western Power. Classified as a "Disconnected Microgrid"	Would not attract the WEM FOS or WEM Island FOS
A refinery when disconnected and running on its own	Not operated by AEMO or Western Power. Classified as an "Embedded System"	Would not attract the WEM FOS or WEM Island FOS
A private installation at a retirement village, disconnected and running on its own	Not operated by AEMO or Western Power. Classified as an "Embedded System"	Would not attract the WEM FOS or WEM Island FOS