Decision on the Final Technical Rules for Western Power's South West Interconnected Network

Submitted by Western Power

26 April 2007

Economic Regulation Authority

WESTERN AUSTRALIA

A full copy of this document is available from the Economic Regulation Authority web site at www.era.wa.gov.au.

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DECISION

1. The Authority's decision is that the Final Technical Rules comply with chapter 12 of the *Electricity Networks Access Code 2004* (**Code**) and the Code objective. Accordingly, the Authority approves the Final Technical Rules appended to this Decision.

2. Section 12.15 of the Code states that when the Authority approves technical rules for a network, it must specify a technical rules start date for the technical rules which must be consistent with the Code objective and at least 30 business days after the approval is published.

3. Consistent with section 12.15 of the Code, the Authority specifies **1 July 2007** as the start date for the Technical Rules.

REASONS

Background

4. Technical rules consist of the standards, procedures and planning criteria governing the construction and operation of an electricity network. Section 12.32 of the Code provides that, unless a different form of technical rules will better achieve the Code objective or the objectives set out in section 12.1 of the Code, the technical rules must address the matters listed in Appendix 6 of the Code.

5. On 24 August 2005, Western Power submitted its proposed technical rules for its South West Interconnected Network (**SWIN**) within the South West interconnected system (**SWIS**).

6. The Authority published the proposed technical rules alongside Western Power's proposed access arrangement on 31 August 2005. Submissions on the proposed technical rules were not invited at that time.

7. Section 12.11 of the Code sets out the approvals process for technical rules submitted pursuant to section 12.10 of the Code. In approving technical rules, the Authority must be satisfied that they are consistent with the Code objective and comply with chapter 12 of the Code.

8. The objectives for technical rules as specified in section 12.1 of the Code are that they:

   a) are reasonable; and

   b) do not impose inappropriate barriers to entry to a market; and

   c) are consistent with good electricity industry practice; and

   d) are consistent with relevant written laws and statutory instruments.

9. The Authority must not approve the proposed technical rules unless it is satisfied that the rules reasonably accommodate the interconnection of further

networks in the future or if it considers that the rules would require any person to engage in an act (or omit to engage in an act) which would contravene a written law or statutory instrument.

10. In accordance with section 12.17 of the Code, in January 2005 the Authority established the Technical Rules Committee (**Committee**) to perform the functions prescribed under section 12.23 of the Code.

11. The Authority convened the Committee to consider and advise upon Western Power's proposed technical rules. As required by section 12.19(a)(i) of the Code, the membership of the Committee consisted of representatives from:

    a) Office of Energy (Chair, representing the Coordinator of Energy);

    b) Networks Business Unit, Western Power Corporation (service provider) (subsequently became Western Power);

    c) Southern Cross Energy (service provider interconnected with Western Power's SWIN);

    d) Alinta Limited (User representative);

    e) Perth Energy Pty Ltd (User representative);

    f) Tiwest Pty Ltd (User representative); and

    g) Wesfarmers Energy Limited (User representative).

12. Representatives from the Authority's secretariat also attended the Committee meetings as observers.

13. Western Power circulated to members of the Committee sections of its proposed technical rules.

14. The process adopted by the Committee was that the members of the Committee provided written comments on each provision in the proposed technical rules that they wished to raise as an issue for discussion. Prior to each meeting these comments were compiled, circulated to all members and formed the agenda for each meeting.

15. In providing their comments, Committee members were requested to focus on:

    a) whether the proposed technical rules satisfied the objectives set out in section 12.1 of the Code; and

    b) any issues that members believed should be brought to the attention of the Authority including any implications the proposed technical rules may have on the achievement of the Code objectives (as set out in Section 2.1 of the Code).

16. This process commenced in January 2005 to assist Western Power in producing its proposed technical rules, and continued following Western Power's submission of the proposed technical rules in August 2005.

17. A working group was established within the Committee to discuss matters of particular importance to small generators. The outcome of this working group

was to provide the Committee with specialist advice and input into the technical rules from the perspective of a small generator.

18. Provisions of the proposed technical rules were considered by exception. That is, unless an issue was raised with a particular provision it was assumed to be endorsed by the Committee.

19. The Committee worked extensively on the proposed technical rules. The proposed technical rules contained 6 sections. Western Power provided the Committee with sections 1 and 4 of the proposed technical rules in advance and, at the time of submitting the proposed technical rules, the Committee had completed its review of these sections and these had been redrafted to reflect the outcomes agreed by the Committee.

20. However, the remainder of Western Power's proposed technical rules had not been considered in detail by the Committee at the time of submission of the proposed technical rules to the Authority. As a result, the Committee's review, in consultation with Western Power, led to proposals for extensive changes to the proposed technical rules that were submitted to the Authority on 24 August 2005.

21. On 12 December 2005, the Committee (including Western Power) provided a Preliminary Report to the Authority in accordance with section 12.11(b)(i) of the Code. The Committee unanimously advised:

> The fundamental recommendation of this report is that the Committee, including Western Power, advises the Authority not to approve Western Power's proposed Rules.

22. The Authority, having assessed the Committee's Preliminary Report and having assessed the proposed technical rules against the requirements of chapter 12 of the Code and the Code objective, resolved on 11 April 2006 not to approve Western Power's proposed technical rules on the ground that they did not satisfy the requirements of chapter 12 of the Code and the Code objective.

23. Pursuant to section 12.11(c)(ii) of the Code, the Authority redrafted the proposed technical rules to the extent necessary to comply with chapter 12 of the Code and the Code objective. The redrafted technical rules were published by the Authority on 11 April 2006 with a Decision and Explanatory Memorandum on the draft technical rules (**Decision and Explanatory Memorandum on the draft technical rules**) that:

    a) set out the Authority's decision and reasons for the Authority's decision;

    b) briefly outlined the structure of the draft technical rules;

    c) provided the Authority's views on the 11 "deadlock issues" identified in the Committee's Preliminary Report dated December 2005 (**Deadlock Issues**);[1]

    d) provided the Authority's response to the Committee's report;

[1] A copy of the Committee's Preliminary Report is available on the Authority's web site www.era.wa.gov.au

e) highlighted specific issues in the draft technical rules which the Authority invited the public to consider; and

f) invited submissions from the public on the entire draft technical rules.

24. In response to the Decision and Explanatory Memorandum on the draft technical rules, the Authority received submissions from:

- Verve Energy (a general submission and a small generators submission);
- Synergy;
- Western Power; and
- Energy Safety (confidential submission).

25. The submissions were provided to the Committee for its review and comment along with the Decision and Explanatory Memorandum on the draft technical rules. The submissions were also posted on the Authority's web site (other than the confidential Energy Safety submission).

26. On 13 June 2006, the Committee provided its Final Report to the Authority.[2]

27. As part of its deliberations, the Committee recognised that significant issues remained concerning small generators. The Committee proposed that a small generator's focus group (**SGFG**) be formed to consider issues arising under the technical rules for small generators. The SGFG was not a formal committee established by the Authority but a group of interested parties from whom the Authority specifically sought input. The SGFG had previously provided the Committee with feedback on small generator issues.

28. The Authority received advice from the SGFG on issues related to small generators arising under the technical rules.

29. Since the Committee's Final Report, the Authority's secretariat has worked with its technical advisers, the SGFG and Western Power to progress issues identified by the Committee and the Authority.

30. The Authority has considered the submissions to the Committee and the Committee's Final Report in coming to a final view on the technical rules. Where appropriate, the SGFG's recommendations have been incorporated into the Final Technical Rules. The Authority has also worked closely with Western Power to develop a document that better reflects the Code and technical rules' objectives. This has resulted in additional changes that were not raised in submissions.

31. In the Authority's view, the Final Technical Rules comply with chapter 12 of the Code and the Code objective. Accordingly, the Authority has approved the Final Technical Rules. The Authority also notes that the Final Technical Rules have been agreed by Western Power.

32. The process of approval of the Final Technical Rules has involved a high degree of formal and informal consultation with stakeholders and Western

[2] A copy of the Committee's Final Report is available on the Authority's web site www.era.wa.gov.au

Power. The Authority is grateful to Western Power and market participants for the cooperation and time spent discussing and resolving issues arising under the draft technical rules.

33. The nature of consultation means that the Authority's decision making process is not able to be documented in a linear fashion. Although the Authority sought and received public submissions, parties who provided those submissions were also involved in vigorous email and face to face debates. Accordingly, it is not possible to document the entire discussions concerning the draft technical rules.

34. The Authority is not required by the Code to issue a detailed decision on the Final Technical Rules. However, the Authority is committed to a transparent decision making process and accordingly releases this Decision. This Decision contains both the Authority's Final Decision on the technical rules and a summary of the major amendments to the draft technical rules arising from submissions and discussions between the Authority, Western Power and market participants.

Specific issues arising from the draft technical rules

35. The Authority worked closely with Western Power and key network stakeholders to develop the draft technical rules. During that process, a number of issues arose which, in the Authority's view, would benefit from submissions from interested parties. The Authority highlighted those issues in its Decision and Explanatory Memorandum on the draft technical rules. The specific issues were:

    a) Fault levels;

    b) Requirements for connection of energy systems to the low voltage distribution system via inverters;

    c) Ride-through;

    d) Load shedding;

    e) Credible contingency events;

    f) Protection requirements for small generating units;

    g) Service standards;

    h) Distribution system design;

    i) Provision of primary speech equipment;

    j) Computer model; and

    k) Section 5 requirements and the market rules.

36. The Authority sets out a brief summary of the response to those issues and the Authority's determination of those issues as incorporated in the Final Technical Rules. The Authority does not intend to summarise every submission received on these issues as the submissions have already had detailed consideration

from both the Authority and the Committee. Further, in some cases, the submissions have been augmented or superseded by Committee discussions or by other stakeholder deliberations. The intention is to provide guidance as to the resolution of these issues identified in the Decision and Explanatory Memorandum on the draft technical rules.

Fault levels

Summary of issue

37. In the Decision and Explanatory Memorandum on the draft technical rules, the Authority noted the issue of fault levels and, in particular, liability for upgrading equipment when fault levels increased.

38. In respect of the distribution system, clause 3.2.1(f) in the draft technical rules provided that a User who connects to the distribution system must install equipment that is rated for the maximum fault levels specified in clause 2.5.9 (now 2.5.7) of the draft technical rules unless granted an exemption by Western Power.

39. In respect of Users connected to the distribution system at the rules commencement date, clause 1.9.5, required Users to monitor their equipment on an ongoing basis and to ensure its continued safety and suitability as conditions on the power system change. This clause also applied to Users connected to the transmission system at the rules commencement date.

40. In respect of the transmission system, fault levels are expected to gradually increase over time. Liability for equipment upgrades as a result of these increasing faults levels was not prescribed in the technical rules as it is a commercial issue.

41. Under the draft technical rules, if subsequent network changes required Western Power to increase fault levels above those specified for the distribution system in clause 2.5.9 (now 2.5.7) of the draft technical rules it would need to seek an exemption from the Authority. Assuming the exemption was granted, Users affected by the increased fault levels would need to ensure their equipment's fault level rating was adequate for the increased fault level and, if necessary, would need to upgrade the equipment affected.

42. The Authority invited comment from interested parties as to whether these arrangements were appropriate and also whether the question of liability for equipment upgrades as a result of increases in potential fault levels should be more explicitly prescribed in the Final Technical Rules.

Submissions received

43. Western Power provided a detailed submission on fault levels. In summary, it noted that the draft technical rules that impacted on the control of fault currents should either remain in the Final Technical Rules or, in certain cases, be qualified to reflect the complexity of the issues involved.

44. Concerning upgrades of equipment, the Committee noted in its Final Report, that:

The issue with increasing fault levels and who was to pay for any costs of upgrading equipment was significant. A member raised the more specific question of where a new generator caused local fault levels to increase, how much of the cost of upgrading equipment was a shared system cost and how much was to be carried by the generator? There was recognition that this was not an easy matter to resolve, but it was stressed that reasonableness needed to prevail.

Determination of the issue in the Final Technical Rules

45. Clause 3.2.1(f) of the Final Technical Rules has been amended to cover Users connected to the transmission and distribution system. It provides that a User may not install or connect equipment on or to the transmission system that is rated at a level lower than that specified in the relevant connection agreement in accordance with clause 2.5.7(b).

46. In the case of a connection to the distribution system, Users who are not small use customers must install equipment at the connection point with a fault rating greater than the maximum fault level specified in clause 2.5.7(b), unless a lower fault rating is agreed with Western Power and specified in the relevant connection agreement. In the case of small use customers the Western Australian Electrical Requirements will apply, which will mean that equipment with a fault rating of 6 kA will suffice in most situations.

47. In the Authority's view these requirements strike a reasonable balance between the need to ensure that a gradual increase in network fault levels over time can be accommodated and the need to ensure that Users are not faced with the costs of installing equipment with ratings that are higher than reasonably required for a specific situation.

48. Concerning the costs of upgrades to equipment where a User's equipment increases the fault levels in the transmission system, the Authority notes the Committee's comment in its Final Report. However, the issue has not been dealt with in the Final Technical Rules as, in the Authority's view, it is a commercial rather than technical matter and is therefore best left for the parties to negotiate in accordance with the Code.

Requirements for connection of energy systems to the low voltage distribution system via inverters

Summary of issue

49. Clause 3.7 of the draft technical rules set out the particular requirements for the connection by Users of energy systems to the low voltage distribution system via inverters. The Authority invited comment from interested parties as to whether the detail included in clause 3.7 was appropriate for the Final Technical Rules.

50. Western Power submitted that clause 3.7 provided a reasonable balance between the requirements and obligations of Western Power and Users and should remain unaltered. However, Western Power agreed that it was acceptable for a competent person, who may not necessarily be a Chartered Professional Engineer, to certify the results of tests of inverter protection systems in clause 3.7.8 of the draft technical rules.

Determination of the issue in the Final Technical Rules

51. Clause 3.7 is unaltered in the Final Technical Rules save that clause 3.7.7 has been amended to require that the protection arrangements for a specific installation must be approved by Western Power before connection and clause 3.7.8 has been amended to permit a competent person rather than a Chartered Professional Engineer to certify the results of tests of inverter protection systems.

Ride-through

Summary of issue

52. Clause 3.3.4.3 of the draft technical rules imposed the same ride-through requirements for generating units with a rating of over 10 MW, which in most cases would be directly connected to the transmission system, on smaller units connected to the distribution system. The requirements of clause 3.6.5 of the draft technical rules for small generators are more onerous than required by the National Electricity Rules (**NER**).

53. The Authority invited comment from interested parties on whether the ride-through requirements for small generators were appropriate, or whether the Final Technical Rules should require only larger generators or generators located on more critical parts of the network to be subject to the ride-through requirements.

Submissions received

54. Western Power provided a submission on this issue as did Verve Energy. This was also the subject of discussions with small generator representatives.

Determination of the issue in the Final Technical Rules

55. The rule has been amended in the Final Technical Rules. The issue of ride-through presented three issues, one for small generators (noted above) and two for large generators.

56. Small generators accepted the frequency ride-through requirements as stated in the draft technical rules. Accordingly, no amendment has been made to the Final Technical Rules from the draft technical rules. However, very small generators (<150kVA) have been exempted from the voltage ride-through requirement. This has been agreed by Western Power.

57. Large generators raised the problem that the frequency ride-through requirement in the draft technical rules was onerous and could cause excessive stress on the turbine blades of modern combined cycle gas turbines. The draft technical rules required that a generating unit and a power station in which the generating unit is located must be capable of continuous uninterrupted operation within the power system frequency envelope specified in the technical rules. Operation for a period of at least 20 seconds at a frequency of between 47.0 Hz and 47.5 Hz was required before a generator was permitted to disconnect from the network.

58. After discussions, Western Power agreed that a frequency ride-through period of 10 seconds was feasible. Accordingly, the Final Technical Rules require a

period of operation of at least 10 seconds each time the frequency is between 47.0 Hz and 47.5Hz.

59. Verve Energy also raised issue with the zero network voltage ride-through time in clause 3.3.4.3(c)(2) of the draft technical rules being 450 milliseconds. Western Power accepted that the zero network voltage ride-through time should not be a global time but should reflect the actual circuit breaker fail fault clearing time that applied at the point of connection with the 450 milliseconds being the maximum ride-through time required (even if fault clearing times at the point of connection are longer than this). Accordingly, the Final Technical Rules require a generator to remain connected during transmission or distribution system faults which cause the voltage at the connection point to drop below the nominal voltage for a period equal to the circuit breaker failure fault clearing time to clear the fault, plus a safety margin of 30 milliseconds, followed by a period of 10 seconds where the connection point voltage may vary in the range 80% to 110% of the nominal voltage, before returning to the normal range of 90% to 110% of the nominal voltage. For those points of connection where the circuit breaker fail fault clearing time is longer than 450 milliseconds the zero voltage ride-through time of 450 milliseconds will apply.

60. The Authority recognises that power system security and stability are enhanced if connected generators are able to ride-through network faults. It considers the 450 millisecond zero voltage ride-through requirement could be onerous in some instances; particularly for synchronous generators, which could have difficulty remaining in synchronism following a sustained loss of voltage at the connection point. However, the revised technical rule provides greater flexibility.

61. The Authority anticipates that Western Power and proponents seeking connection will work together to seek the most cost effective solution, which may sometimes involve making changes to the transmission or distribution system, such as the installation of faster protection. If this cooperation does not occur, this may be an issue when the technical rules are reviewed in accordance with section 12.56 of the Code.

Load shedding

Summary of issue

62. The Authority included Clause 2.2.1(d) in the draft technical rules. It stated:

> Frequency tolerance limits must be satisfied, provided that there is no shortage of spinning reserve in accordance with clause 3.10.2 of the Wholesale Electricity Market Rules, without the use of load shedding under all credible power system load and generation patterns and the most severe credible contingency event.

63. Western Power sought to amend the standard to be conditional on sufficient spinning reserve being dispatched to enable compliance.

64. Performance standards signal to Users the level of service they can expect from the network and provide the criteria for the operation and ongoing development of the power system. The Authority considered that it was inappropriate to specify a performance standard that is conditional on Western Power being in a position to comply since such a standard would not be helpful to Users and would not provide an appropriate benchmark for ongoing power system development.

65. The Authority invited comments from interested parties as to whether the approach taken by the Authority to include clause 2.2.1(d) of the draft technical rules in respect of load shedding offered an appropriate solution or whether the standard should be amended to reflect Western Power's preferred position.

Submissions received

66. Western Power submitted that the rule should be amended to reflect that load shedding may occur due to circumstances beyond the control of the Network Service Provider including a future Wholesale Electricity Market Rule change

Determination of the issue in the Final Technical Rules

67. The Authority notes that this issue concerns a power system performance standard and is not specifically an obligation on Western Power. It is the responsibility of the IMO and System Management to dispatch generation and reserves and operate the system in real time to meet the performance standards (although it is Western Power's responsibility to plan the network so that the IMO can do this).

68. Western Power has submitted that load shedding will be required under some generation dispatch and reserve scenarios if an unplanned outage of the largest connected generator occurs when that generator is fully loaded. The Authority understands that the probability of such an occurrence is very low and the situation can be mitigated by reducing the load on the largest connected generator and/or increasing the level of spinning reserve over and above the minimum required. However, the Authority understands that such measures would only be required under certain operating scenarios.

69. The Authority maintains its view that it is inappropriate to specify a performance standard that is conditional on Western Power being in a position to comply since such a standard would not be helpful to Users and would not provide an appropriate benchmark for ongoing power system development.

70. The proposed standard is reasonable, particularly as the Final Technical Rules are forward looking and grandfather the existing situation. The Authority has proposed, and Western Power has accepted, that the rule not be amended from the draft technical rules as the current situation should only be temporary and can be managed either by Western Power negotiating with the IMO on how the power system is operated or by seeking an exemption to cover those operating conditions where the system cannot fully comply. Importantly, if this approach is taken, the problem is not embedded in the technical rules for the future.

71. Therefore, the Authority is satisfied that the clause, as drafted, satisfies Western Power's concerns that load shedding may occur beyond the control of Western Power as the rule clarifies that frequency limits only apply where there is adequate spinning reserve.

Credible contingency events

Summary of issue

72. Clause 2.3.7.1(a) of the draft technical rules states:

> The Network Service Provider must plan, design and construct the transmission and distribution systems so that the short term power system stability and dynamic performance criteria specified in clauses 2.2.7 to 2.2.10 are met under the worst credible system load and generation patterns, and the most critical, for the particular location, of the following credible contingency events without exceeding the rating of any power system component or, where applicable, the allocated power transfer capacity:
>
> 1) a three-phase to earth fault cleared by disconnection of the faulted component, with the fastest main protection out of service;
> 2) a single-phase to earth fault cleared by the disconnection of the faulted component, with the fastest main protection out of service;
> 3) a single-phase to earth fault cleared after unsuccessful high-speed single-phase auto-reclosure onto a persistent fault;
> 4) a single-phase to earth fault cleared by the backup protection; or
> 5) sudden disconnection of a system component, e.g. a transmission line or a generation unit.

73. Clause 2.3.7.1(a) of the draft technical rules define the credible contingency events that form the benchmark disturbances through which the power system must be able to remain stable and controllable without the use of load shedding.

74. The Authority invited comments from interested parties as to whether the definition of credible contingency events contained in clause 2.3.7.1 of the draft technical rules was appropriate.

Submissions received

75. Western Power submitted that the draft technical rules were a reasonable compromise between the need to manage the possibility of occurrence of a catastrophic system failure caused by instability, against the need to maximise power transfer capability so as to minimise constraints on generator operation. However, Western Power proposed an alternate clause to address the Authority's concerns.

Determination of the issue in the Final Technical Rules

76. The Authority has retained the provisions in the draft technical rules, save that it has adopted Western Power's proposed alternate clause in the Final Technical Rules. Therefore, the Final Technical Rules retain the credible contingency event clause in the draft technical rules with a clarification that rule 2.3.7.1(a)(4) concerns a single-phase to earth fault small zone fault or a single-phase to earth fault followed by a circuit breaker failure.

Protection requirements for small generating units

Summary of issue

77. The protection requirements for small generating units are contained in section 3.6 of the draft technical rules. Table 3.6 in the draft technical rules sets out a detailed summary of those protection requirements, which was significantly more prescriptive than the requirements in clause 3.5.2 for the connection of large generators to the transmission system.

78. Western Power accepted that the requirements in clause 3.6 are more prescriptive than other requirements in the draft technical rules but noted the particular problems it faces in connecting embedded generation to a distribution feeder.

79. The Authority invited comment from interested parties on whether clause 3.6 in the draft technical rules, and in particular, the detailed protection requirements specified in Table 3.6, were appropriate.

Submissions received

80. The Authority received submissions from Synergy, Verve Energy and Western Power on this issue. Requirements for small generators (including protection requirements) were also extensively discussed with small generator representatives.

Determination of the issue in the Final Technical Rules

81. This issue was treated as a deadlock issue by the Committee and discussed in its Final Report. The Authority's determination on this issue is discussed at paragraphs 137 to 149 below.

Service standards

Summary of issue

82. The draft technical rules contain performance standards in respect of the technical standard of delivered electricity but not in respect of reliability. The Authority's view, when it published the draft technical rules, was that the reliability benchmarks required in the Authority's draft decision on Western Power's proposed Access Arrangement for the SWIN address the requirement of the technical rules in relation to the specification of reliability criteria and the draft technical rules, together with the amendments required in the Authority's draft decision on Western Power's proposed Access Arrangement for the SWIN, would better achieve the Code objective and the objectives set out in section 12.1 of the Code.

83. The Authority invited comments from interested parties on whether the technical rules should contain performance standards in respect of reliability.

Submissions received

84. Western Power submitted that, in its view, the Final Technical Rules should not include performance standards in respect of reliability.

Determination of the issue in the Final Technical Rules

85. No performance standards in respect of reliability were included in the Final Technical Rules.

Distribution system design

Summary of issue

86. Clause 2.5.7(a) of the draft technical rules required that all new and replacement switches, including ring main units, must be remotely operable and controlled from the distribution control centre. Clause 2.5.7(b) further required that all new and replacement distribution transformers be fitted with load monitoring facilities which are capable of being modified for monitoring from the distribution system control centre.

87. These were new requirements that did not reflect Western Power's current practice, nor did they reflect standard practice in the electricity supply industry. However, the Authority did not make any changes to the remote control requirements proposed by Western Power. Rather, it invited comment from interested parties on this issue before making Final Technical Rules.

Submissions received

88. Western Power noted that clause 2.5.7(a) was not intended to apply to low voltage switches and should be qualified to apply to high voltage switches. Western Power also argued that the progressive introduction of remote control of high voltage switches, local load monitoring of transformers and provision for remote monitoring is viable and would progressively improve the reliability of supply.

Determination of the issue in the Final Technical Rules

89. The Authority accepts in principle that more extensive use of remote control, and the load monitoring of high cost critical assets have the potential to improve the reliability of supply and increase the efficiency of Western Power's asset management. However, accepted industry practice is to adopt a targeted implementation of these technologies in order to limit their use to situations that are cost effective. The Authority was therefore concerned that the economic cost of Western Power's blanket proposal might be significantly greater than the benefit from requiring the changes. In particular, the Authority was concerned that the requirement did not reflect Western Power's current practice, nor did it reflect standard practice in the electricity supply industry.

90. The Final Technical Rules contain more limited requirements that, in the view of the Authority, are more cost effective and more consistent with accepted industry practice. Remote control of high voltage switchgear is permitted only where it can be shown to be cost effective and load monitoring of distribution transformers is limited to assets rated at 300 kVA and above (clause 2.6 of the Final Technical Rules). The Final Technical Rules do not limit Western Power's ability to retrofit these technologies to existing assets and in no way limit Western Power's ability to apply these technologies in locations that can be shown to be strategically appropriate.

Provision of Primary Speech Equipment

Summary of issue

91. Clause 3.3.5.3(c) of the draft technical rules made a User responsible for the provision of the primary speech communication channels used to dispatch

generation to support the operation of the Wholesale Electricity Market (**WEM**). This is different from the corresponding NER requirement which mandates that such communication channels be provided by the Network Service Provider.

92. The Authority was concerned that the proposed requirement could potentially result in a proliferation of independent speech channels and could result in unreliable or low security channels that had the potential to undermine the successful operation of the WEM. Therefore, although the Authority did not change the requirement proposed by Western Power, it invited interested parties to comment on this issue.

Submissions received

93. Verve Energy raised concerns with this requirement. Western Power submitted that it wished to amend the position proffered in the draft technical rules in light of information received on practices followed by market participants in the NEM and New Zealand. Western Power noted that the Public Switched Telephone Network was generally used as the primary speech communication channel but that reliability is ensured by using the more secure Network Service Provider private dial telephone network as a backup. Adopting this framework, there was no requirement for a proponent to provide a dedicated speech channel and the Network Service Provider's system could be used as a more secure backup if required.

94. Western Power suggested that the User continue to supply a primary speech communication channel and that the Network Service Provider makes available the backup speech communication channel.

Determination of the issue in the Final Technical Rules

95. The Authority accepted Western Power's submission. The Final Technical Rules (clause 3.3.4.3) requires a User to provide and maintain a speech communication channel where routine and emergency control telephone calls may be made between the User's responsible engineer or operator and System Management or the Network Service Provider, whichever is applicable. The Final Technical Rules also provide for the Network Service Provider to provide a separate telephone link or other backup speech communications channel for the primary speech communications channel.

Computer Model

Summary of issue

96. Clause 3.3.10 of the draft technical rules required a large generator to provide a computer model of the dynamic behaviour of its plant to the Network Service Provider, suitable for use in the Network Service Provider's nominated software package, currently PSS/E. One of the requirements proposed by Western Power in relation to the provision of this computer model in clause 3.3.10 was that:

> The User must support the model for changes and updates in the nominated software for the duration of connection to the transmission or distribution system.

97. The Authority was concerned that if the requirement remained, a User may be at risk of having to incur future costs as a result of actions taken unilaterally by

the Network Service Provider, when that User is not in a position to influence these actions or negotiate alternative outcomes. Therefore, the Authority deleted this requirement from the draft technical rules.

98. The Authority invited comment from interested parties on whether this position was appropriate.

Submissions received

99. Western Power submitted that the provisions in the draft technical rules were inadequate to deal with a circumstance where a User failed to submit a computer model that was fully compliant with the technical rules. In particular, it was noted that a number of Users had already managed to connect to the SWIN without fully complying with Western Power's computer modelling requirement and the models provided by those Users were in a form that was unable to be technically supported by Western Power.

100. The problem has arisen because some manufacturers will not make the source code of their models available to Western Power for commercial reasons and have only provided a computer model pre-compiled for use with Western Power's PSS/E software. Without the source code it may not be possible for Western Power to use the model provided should it decide to upgrade or change its software.

Determination of the issue in the Final Technical Rules

101. The Authority accepted Western Power's submission on the basis that it is reasonable for the rules to require that sufficient information be provided so that Western Power can replicate its existing model should it decide to upgrade or change its software. However, the Authority was concerned that a User who provided all information required by the technical rules would not be liable to incur future costs if the Network Service Provider changed its existing computer model.

102. The Final Technical Rules provide that a generator may connect to the transmission or distribution system without fully complying with the requirements of the technical rules as they concern computer models provided that the generator proposes alternative arrangements that are acceptable to the Network Service Provider for supporting the computer models. This should provide sufficient flexibility to accommodate the intellectual property concerns of manufacturers.

103. However, a generator that has connected to the transmission or distribution system prior to the rules commencement date, and that has not fully complied with the requirements of the technical rules as they concern computer models, must provide a new computer model that is recompiled for any new or upgraded software that Western Power might choose to use.

Section 5 requirements and the Market Rules

Summary of issue

104. In the Decision and Explanatory Memorandum on the draft technical rules, the Authority noted that section 5 of the draft technical rules contained obligations of the Network Service Provider and Users in respect of power system

operation and coordination. The draft technical rules did not (and could not) bind the IMO or System Management. However, they did relate to Western Power's obligations in relation to the operation of that part of the network that was not under the direct control of System Management. The Authority noted that the boundary between Western Power's obligations and System Management's obligations under the technical rules was not entirely clear.

105. The Authority sought comments from interested parties on whether the requirements of section 5 of the draft technical rules were appropriate given the need to be consistent and avoid overlap with the Market Rules and the extent to which section 5 of the draft technical rules supports the efficient operation of the SWIN as a whole.

Submissions received

106. Western Power agreed with the Authority's observations in the Decision and Explanatory Memorandum on the draft technical rules. However, Western Power submitted that the boundary between Western Power's obligations and System Management's obligations in section 5 were clear and no further amendment was required.

Determination of the issue in the Final Technical Rules

107. The Final Technical Rules have further refined section 5 to improve clarity. The Authority is satisfied that the boundary between Western Power's obligations and System Management's obligations is clear.

Other amendments to the draft technical rules

108. As noted above, the draft technical rules have been significantly amended as a result of submissions, further discussions with Western Power and to improve consistency and clarity.

109. The Authority does not intend to set out all of the amendments to the draft technical rules as most of the amendments are minor, and have been made to improve clarity and consistency, or are of an editorial nature.

110. Rather, set out below is a summary of the main amendments and a summary of the reason for amendment other than the amendments discussed above.

111. In each case, Western Power has either proposed or accepted the amendment.

Clause Draft Decision	Clause Final Draft	Topic	Issue	Resolution
N/A	1.9.3(b)	Changes to rules to accommodate new standards.	User representatives on the SGFG were concerned that mandating a specific standard could prevent connection of generators that do not	Clause 1.9.3(b) provides a process where the rules can be changed to accommodate alternatives to the specified IEC standard,

Clause Draft Decision	Clause Final Draft	Topic	Issue	Resolution
			comply.	provided that a User can show that the requirements of the alternative standard were equivalent or more stringent.
N/A	1.9.4(b)	Rules compliance for upgraded facilities.	In discussions between Verve and Western Power following the release of the draft technical rules, Verve was concerned that an equipment change or upgrade within a facility might trigger a requirement for the whole facility to be upgraded to become compliant with the technical rules.	Clause 1.9.4(b) clarifies that in these circumstances only the equipment being upgraded or replaced must be compliant. There is no requirement to upgrade other existing equipment within that facility to be compliant with the technical rules.
N/A	2.3.8(c)	Power transfer limits	The Authority considered that the use of short term equipment ratings has the potential to increase the utilisation of existing assets.	Clause 2.8.3(c) requires short term thermal ratings consistent with good industry practice to be applied.
2.5.2.1	2.5.2.1	Responsibility for maintaining supply on loss of Goldfields interconnector.	Western Power was concerned that the rules make it responsible for ensuring that backup supply was available for the Kalgoorlie-Boulder city and Coolgardie town loads during an outage of the Goldfields interconnector. This requires a network support contract which is the responsibility of the IMO.	The Authority noted that the technical rules cannot bind the IMO. Nevertheless, given the size of the loads involved and the number of people potentially affected, the technical rules were amended to signal that the Authority expects such arrangements to be put in place. The boxed wording in the Final Technical Rules does this without specifically assigning responsibility or defining the process.
2.5.9(a)(1)	2.5.7(b)(1)	Maximum fault level on 415V distribution system.	Western Power advised that it is unable to achieve the specified 25 kA fault level at 415 V when the 415 V network was supplied by two transformers in	The technical rules were amended to require a fault level of 63 kA where supplied from two transformers and 31.5 kA in other situations.

Clause Draft Decision	Clause Final Draft	Topic	Issue	Resolution
			parallel and that in some situations the 25 kA fault level was too low.	
3.3.4.3(h)(2)	3.3.3.3(h)(2)	Continuous uninterrupted operation	In its submission on the draft rules, Verve noted that the requirement to maintain pre-fault power output could not be achieved by some generator types because the power output was a function of frequency.	The Final Technical Rules have been amended to address this concern.
3.3.5.5	3.3.4.5	Voltage control system	A wind generator approached Western Power and advised that the requirements of this clause in the draft technical rules were too onerous and requested they be revised. Following investigation Western Power approached the Authority with proposed revisions.	The Final Technical Rules have been amended to incorporate Western Power's revisions and address this concern.
3.6.1	3.6.1	Small generators – overview.	Verve Energy submitted comprehensive comments on the requirements of clause 3.6 and other Users have expressed concern at some of the requirements through the Technical Rules Committee. As a result the SGFG was consulted to consider the issues raised. The proposed wording reflects the work of the SGFG, as well as additional issues raised by Western Power.	The proposed amendments to the draft technical rules have been agreed with Western Power and are reflected in the Final Technical Rules.
3.6.2(b) and (c)	3.6.2(b)	Point at which rules apply		
N/A	3.6.2(c)(3)	Compliance assessment criteria.		
3.6.3(a)	3.6.3(a)	Information requirements		
3.6.3(c) 3.6.3(d)	3.6.3(c) 3.6.3(d)	Information requirements.		
3.6.4(c)	3.6.4(c)	Safety and reliability		
N/A	3.6.4(e) 3.6.4(f)	Equipment fault ratings		
3.6.5	3.6.5	Applicable requirements of clause 3.3		
3.6.6(c)	Deleted	Generating unit characteristics		

Clause Draft Decision	Clause Final Draft	Topic	Issue	Resolution
3.6.7.2(c)	3.6.7.2(c)	Isolation point		
3.6.7.3(b)	3.6.7.3(b)	Synchronising interlocks		
3.6.10.1	3.6.10.1	General protection requirements		
3.6.10.3	3.6.10.3	Islanding protection		
N/A	3.6.11	Commissioning and Testing		
4.1.1(j)(1)	4.1.1(j)(1)	Security	Users expressed concern that there was no requirement for a site owner to ensure the security of another User's equipment that is legitimately left at a site.	The Final Technical Rules have been amended to address this concern.
4.2.2	4.2.2(b)	Scheduling of testing and commissioning.	Users expressed concern that Western Power was not required to schedule pre-commissioning tests in accordance with project schedules.	The Final Technical Rules have been amended to address this concern.
Attachment 4	Attachment 10	Small power station design data	The Authority was concerned that the requirements in Attachment 4 of the draft technical rules were unnecessarily onerous for small generators.	This Attachment provides a simplified set of requirements for small generators covered by clause 3.6.
Attachment 10	Attachment 12	Small generator test schedule	The Authority was concerned that the test requirements in Attachment 10 of the draft technical rules were not appropriate for small generators.	This Attachment provides a simplified set of requirements for small generators covered by clause 3.6.

Deadlock issues

112. In its Preliminary Report, the Committee identified 11 deadlock issues which the Committee was unable to resolve by consensus.

113. Section 12.26 of the Code provides that if the Authority is advised of a deadlock, it must form a view on the subject of the deadlock and advise the

Committee of its determination. The Authority considered the 11 deadlock issues identified in the Committee's report including the records of discussion. The Authority also received advice from PB Associates and McGill Engineering Services Pty Limited and has discussed these issues with Western Power. The Authority advised the Committee of its determination on the 11 deadlock issues on 22 March 2006 and provided details of its determination in the Decision and Explanatory Memorandum on the draft technical rules.

114. In its Final Report, the Committee accepted the Authority's determination on the deadlock issues save for:

- generator frequency standards (deadlock issue 1);
- stability requirements (deadlock issue 2);
- reactive power requirements (deadlock issue 4);
- small generators; and
- fault clearance times (deadlock issue 8).

115. The Authority briefly sets out each issue below together with a summary of the Committee's response and the Authority's final determination on the issue as reflected in the Final Technical Rules.

Issue 1: Frequency standards

116. Concerns were raised by the Committee that the frequency standards specified in Table 2.1, rule 3.3.4.3(b) and Table 3.4 of the proposed technical rules could function as a barrier to connection, particularly for large gas turbines. It was stated that manufacturers of gas turbines would not warrant their machines when exposed to low frequencies for even short periods. On the other hand, it was noted that exemptions from the technical rules may be granted to Users.

117. The Authority's view in the Decision and Explanatory Memorandum on the draft technical rules was that, given the need to operate under the current instantaneous reserves policy for the SWIS, the frequency range proposed by Western Power was appropriate and reflective of similar networks.

Committee's response

118. The Committee was still concerned that rule 3.3.4.3(b) and Figure 3.4 of the draft technical rules required generating plant to operate for at least 20 seconds at frequencies between 47.0 Hz and 47.5Hz and for at least 6 seconds at frequencies between 52.0 Hz and 52.5 Hz.

119. It was noted in Committee discussions that three of the four manufacturers of large gas turbines in the world had sought or were seeking derogations from this rule.

120. Western Power reviewed all known derogation applications over the previous few years in relation to this issue. Western Power proposed a time limit of 10 seconds for operation in the range 47.0Hz to 47.5Hz which would avoid the need for any derogations. The Committee endorsed this proposal.

Final Technical Rules

121. The Authority accepts Western Power's proposal and the Committee's recommendation and the Final Technical Rules incorporate a requirement that generating plant operate for at least 10 seconds in the range 47.0Hz to 47.5Hz..

Issue 2: Stability assessment

122. Users on the Committee contended that Western Power's approach to stability assessment was too conservative and restrained their capacity to transfer power.

123. Users asserted that, using a combination of critical contingencies with worst case system operating conditions, the acceptable stability envelope is determined by scenarios with an extremely low probability of occurring.

124. The Authority noted that the reserves policy in the Market Rules meant that the SWIS is likely to be more prone to transient and voltage instability which arise following the occurrence of a "trigger event" due to the lower inertia of the system relative to the total load and the consequent lower levels of dynamic reactive support likely to be available.

125. Further, it was noted that this issue is exacerbated by the topography of the SWIS, as the limited capacity of the long 220kV line to Kalgoorlie restricts the ability of generators located in the Goldfields region to support the system voltage in the event of a fault in the vicinity of the Perth metropolitan area.

126. The Authority understands that the use of a less conservative operating policy could increase the capacity of the SWIN, and in particular the Goldfields interconnection, for power transfer purposes. However, the consequences following an extreme trigger event may be more serious as a result. For these reasons the Authority's view was that no amendment should be made to the planning criteria proposed by Western Power for stability assessment.

Committee's response

127. The Committee noted that recently a more flexible approach had been taken by Western Power to this issue. Some Committee members expressed a desire that the approach be codified in the Final Technical Rules.

128. The Committee noted that it would be difficult to achieve the members' desired outcome through wording that was not unduly prescriptive. Accordingly, the parties should rely on the obligation in the Technical Rules that the parties act reasonably. Further, parties had the option to seek an exemption from the requirements and, if such an exemption was not granted, refer an access dispute to the Authority.

Final Technical Rules

129. The Authority notes that the power transfer capability of a particular part of the network is not necessarily fixed but can sometimes vary with the generation dispatch and other operating conditions. Clause 2.3.8(a) of the Final Technical Rules provides that, consistent with the requirements of the technical rules,

power transfer capabilities should to the extent practicable maximise capacity made available to Users. The Authority considers that this provision should encourage Western Power to be flexible when applying its planning standard and to avoid limiting the power transfer capacity made available to Users at times when the system operating conditions make such limitations unnecessary.

130. Western Power has indicated that it would produce a guide as to how it would approach stability assessment. In the Authority's view, this is an appropriate idea as it would promote transparency and consistency in Western Power's approach and should overcome any members' concerns without creating unduly prescriptive technical rules.

Issue 3: Reactive power capabilities

131. A User on the Committee was concerned that the requirement for synchronous generators to be capable of operating at a power factor of 0.8 lagging was excessive and suggested that the Network Service Provider specify the power factor performance capability as being from 0.9 lag to 0.9 lead.

132. The Authority was satisfied that the need for reactive power generation on the SWIN, particularly around the load centre in the Perth metropolitan area, is high. Given the topography of the network and, in particular, the existing policy in relation to the scheduling of spinning reserve (which limits the amount of generation connected to the power system at any time and therefore the potential sources of reactive power), the Authority concluded that the requirement for reasonably high levels of reactive power capability from new synchronous generators in the draft technical rules was reasonable.

133. The Authority's view was that no change should be made to the reactive power requirements proposed by Western Power. However, the Authority recognised that reactive power requirements may vary across the transmission and distribution system and encouraged proponents affected by this requirement of the technical rules to discuss the likely reactive power requirement for a particular generator location with Western Power.

Committee's response

134. The Committee agreed that a degree of flexibility should address this issue and that proponents might offset a lack of generator reactive power capability through other means, as provided for in clause 3.3.4.1(d) of the draft technical rules.

135. Western Power requested the basis for such negotiation be clarified and defined as the responsibility of the proponent to provide an equivalent reactive performance over a range of voltages at the connection point.

Final Technical Rules

136. The Authority accepts Western Power's suggestion and the Final Technical Rules (clause 3.3.3.1(d)) incorporates the proposal.

Issue 4: Protection requirements for small generating units

137. This issue was not specifically a response to a Deadlock Issue, but concerned the broader issue of the application of the Technical Rules to smaller generators; in particular, the protection requirements for small generators contained in clause 3.6 of the draft technical rules. The Authority noted it was an issue in the Decision and Explanatory Memorandum on the draft technical rules and invited public submissions on the issue.

138. Verve Energy provided the Authority with a detailed submission concerning small generators. A submission from Synergy also concerned the application of the technical rules to small generators.

139. The Committee noted that, due to time constraints, the process of consideration of the technical rules had not allowed the Committee to fully explore the needs of small generators.

140. Western Power also wrote to the Authority:

- requesting that the SGFG be reconvened and it work with the Committee and the Authority to identify acceptable technical rule amendments to support the connection of small generators; and
- advising that it was prepared to develop a simplified User's guide to make it easier for small generators with limited access to technical expertise to understand the technical rules, how they apply to them and to facilitate preliminary project feasibility studies.

141. The SGFG was convened in an effort to consider issues raised by small generators about the application of the draft technical rules on their ability to access the electricity network.

142. The issue of the application of the technical rules to small generators produced much discussion and resulted in a number of amendments to the technical rules applying to small generators.

143. Concerning protection, the draft technical rules provided that all protection apparatus must comply with the IEC 60255 series of standards.

Final Technical Rules

144. During discussions with the SGFG, a number of proposals were put to Western Power to allow for a "relaxed" standard of protection for small generators. In particular, SGFG members sought to find an alternate standard from the IEC 60255 series of standards. It was asserted that, in other jurisdictions, "relaxed" requirements (being requirements other than the IEC 60255 series of standards) are permitted for small generators. However, no evidence was provided that this was official practice.

145. Western Power noted, and the Authority agreed, that, even if it was usual practice to allow such other standards, the rules that govern connection to the networks in other jurisdiction still require that protection apparatus comply with the IEC 60255 series of standards. However, Western Power was open to accepting an alternate standard provided that the level of protection of the network was not compromised.

146. Therefore, the Final Technical Rules maintain the requirement that all protection apparatus for small generators must comply with the IEC 60255 series of standards.

147. Western Power has stated that it will initiate discussions with the Energy Networks Association to canvas other Australian network companies' interest in small generator protection standards. If there is sufficient interest, Western Power has indicated that it would form a technical working group to review the applicability of the IEC 60255 series of standards to small generators. Western Power has indicated that, if there is interest in forming a working group, it would anticipate an outcome within 12 to 18 months.

148. The Authority is very supportive of this approach. However, the Authority recognises that there may not be interest from the Energy Networks Association members to such an idea. Further, it may be that the working group contemplated by Western Power is not able to produce an outcome within a reasonable time. If this occurs, the Authority has resolved to refer the issue to the Committee for its review with a view to developing a reasonable alternate standard for small generators.

149. In the meantime, clause 1.9.3(b) has also been added to the Final Technical Rules which provides for an interim measure. It states:

> Where a User can demonstrate that an International or Australian Standard, which is not specified in these Rules, has equal or more onerous requirements to a specified Standard, the Network Service Provider must submit a proposal to the Authority, in accordance with the requirements of section 12.50 of the Access Code, to amend the Rules to include the proposed Standard. The submission must be supported by a report from a competent body, approved by the Australian National Association of Test Laboratories (NATA), which confirms that the requirements of the proposed International or Australian Standards are equal or more onerous to those of the specified Standard.

Issue 5: Maximum fault clearance times

150. Users on the Committee expressed concern that the maximum fault clearing times in the proposed technical rules were considerably slower than in the National Electricity Rules (**NER**). Users considered that Western Power should aim to align the clearance times with the NER requirements and noted that with slow fault clearing times, generators could be subjected to unnecessary operational constraints, higher installation costs and export limitations.

151. The Authority compared fault clearing time requirements in the NER and the proposed technical rules and found that any differences do not appear to be as significant as implied by the Users on the Committee. While the remote end fault clearing times for new 330 kV connected plant on the SWIN were slightly longer than provided for in the draft technical rules, the impact on connected plant was likely to be marginal. A more serious concern existed in relation to the clearing times in the event of a circuit breaker failure but Western Power is constrained by the capability of its existing plant.

152. The Authority also noted that circuit breaker failures are comparatively rare and it was considered unlikely that the longer circuit breaker failure clearing times specified in the draft technical rules would significantly impact User costs of compliance.

Committee's response

153. In its Final Report, the Committee noted that it did not agree with the Authority's position on this issue. However, the Committee's report made no further comment.

Final Technical Rules

154. In the Final Technical Rules, the Authority made no amendment to the circuit breaker requirements. However, the time for voltage ride-through has been amended to reflect the actual time of the circuit breaker failure fault clearing time to clear the fault plus a safety margin of 30 milliseconds (see paragraphs 59 to 61 above).

Recommendations from the Committee

155. In its Final Report, the Committee made 8 recommendations to the Authority. The Authority details its response to each recommendation below.

Recommendation 1 - System Stability

> In order that investment and competition are encouraged, the Committee emphasizes the importance of Western Power adopting a flexible and reasonable approach when considering requirements based on system stability considerations. The reasonableness and dispute resolution provisions of the Technical Rules should support this objective.

156. The Authority considers that the Final Technical Rules contain appropriate obligations on Western Power to act reasonably. As noted in paragraph 129, clause 2.3.8(a) of the Final Technical Rules provides that, consistent with the requirements of the technical rules, power transfer capabilities should to the extent practicable maximise capacity made available to Users. Western Power has also stated that it intends to publish a procedure concerning its approach to system stability.

Recommendation 2 - Frequency Standards

> Based on advice from Western Power on analysis of generator derogation applications over the past few years and the likely new NEM standard, the Committee supports the proposal by Western Power that the Technical Rules be amended to require generator operation in the range of 47.0Hz to 47.5Hz for at least 10 seconds, rather than the previously specified 20 seconds.

157. The Authority supports this recommendation and the Final Technical Rules have been amended to incorporate this.

Recommendation 3 - Reactive Power Capabilities

> The Rules are to allow generation proposals to be based on providing an equivalent reactive power performance (MVAr output) to that of a synchronous generator capable of 0.8 power factor over a range of voltage conditions at the connection point.

158. The Authority supports this recommendation and the Final Technical Rules have been amended to incorporate this.

Recommendation 4 - Further Consideration of Small Generator Requirements

> The Committee supports the submission by Western Power for the Authority to reconvene the Small Generation Working Group. This group would provide further advice to the Committee and the Authority on potential barriers to the connection of small generators and practical Rule amendments to address those barriers.
>
> In its submission, Western Power also proposed to develop a "Users Guide to Technical Rules for Small Generators" that would help the proponents of small generator projects to perform preliminary technical evaluation of the proposed connection with minimal technical assistance. Such an initiative is seen to be a very positive step and is strongly supported by the Committee.

159. The SGFG was formed to consider specific Technical Rules issues from the perspective of small generators. The SGFG provided important input into the technical rules and the process provided for a number of amendments to the technical rules which catered for the needs of small generators. In particular, as noted in this Decision, the Final Technical Rules clarify requirements for the technical rules that apply to generators other than the large market generators covered by clause 3.3, remove some requirements in the draft technical rules for very small generators (<150kVA), clarify the protection requirements and standards for small generators, and relax the requirement for particular information to be provided and commissioning and testing requirements for small generators.

160. Concerning the "Users Guide to Technical Rules for Small Generators", the Authority understands Western Power still intends to produce such a guide. The Authority supports this initiative.

Recommendation 5 - Derogation and Dispute Resolution Process

> It is recognised that the Rules are unlikely to adequately apply to all circumstances but it is undesirable that they become too prescriptive in an attempt to cover all situations. It is far more flexible and robust to have adequate procedures to deal with those circumstances where the Rules are inadequate.
>
> Situations are expected to arise where resolution of disputes and derogations applications need to occur. In order that resolution of these matters do not present a barrier to entry or a disincentive to invest, it is important the matters need to be resolved in an efficient, timely and transparent manner. Towards this end it is strongly recommended that the Authority develop and publish procedures to expeditiously deal with these matters. The procedures are to include timeframes.
>
> The Committee noted that the National Electricity Market appeared to have a system for dealing with such situations and that perhaps Western Australia could learn from this.

161. Section 12.33 and 12.34 of the Code provides that:

> 12.33 A user, applicant or controller may apply to a service provider for an exemption from one or more requirements of technical rules.
>
> 12.34 A service provider must as soon as practicable determine an application under section 12.33:
>
> (a) as a reasonable and prudent person on reasonable technical and operational grounds; and

(b) having regard to the effect the proposed exemption will, if granted, have on the service providers and users of the network and any interconnected network,

and must grant the exemption if the service provider determines that in all the circumstances the disadvantages of requiring the person applying for the exemption to comply with the requirement are likely to exceed the advantages.

162. A dispute over whether the service provider should refuse to grant an exemption to the technical rules is an access dispute under the Code and is therefore able to be arbitrated.

163. The Authority notes the Committee's concerns. However, in the Authority's view, before it considers whether it can or should prescribe procedures for technical rule derogations, the Technical Rules should be implemented and all of the parties given the opportunity to see if the current system for dealing with derogations and disputes is adequate.

Recommendation 6 - Further Role of the Committee

The Committee members have offered to continue to provide advice and commentary to the Authority. Areas where the Committee or individual members can possibly add value are in considering:

- proposed resolutions for outstanding matters;
- the methodology for arriving at a final decision on the Rules;
- drafts on the final decision on the Rules; and
- the recommendations of the Small Generation Working Group.

164. The Authority thanks the Committee members for their offer. The Authority has taken the Committee's comments into consideration in determining the Final Technical Rules. It has also provided a draft of the Final Technical Rules to the Committee. Further, as noted above, if Western Power is unable to resolve the issue concerning an alternate standard to IEC 60255 for small generators within a reasonable time, the Authority intends to refer the issue to the Committee for its consideration.

Recommendation 7 - Process for Amending the Rules

Again recognizing that the Rules are unlikely to be perfect and that situations may change to require Rule amendments, the Authority, as the body responsible, should develop and publish procedures by which the Rules are to be amended.

165. The Authority notes that the procedures to amend the technical rules are contained in section 12.50 of the Code. At this stage, the Authority intends to deal with any rule change proposal on its merits and as the individual circumstances dictate. However, should it become necessary, the Authority will consider publishing procedures that formalise the process beyond the requirements in sections 12.50 to 12.54 of the Code.

Recommendation 8 - Consideration of Verve Energy Submission

The Verve Energy general submission contained detailed comments on the Rules. Western Power has expressed the view that many of the Verve comments may be due to a misunderstanding or inappropriate interpretation of the Rules. However, it was recognized that if Verve Energy, with the level of technical expertise at its

disposal, was misinterpreting the Rules, then perhaps the Rules needed further clarification.

Western Power was encouraged to submit to the Authority a review of the Verve Energy submission, with the Authority requesting Verve to respond to this review. It was expected that this interchange would allow any clarification of the Rules to be identified and that the views of Verve Energy would be very useful in this exercise.

The Committee would appreciate being included in the circulation of documentation and comments.

166. After the Committee handed down its Final Report, Western Power provided comment on Verve Energy's submission and Verve Energy responded to Western Power's comments.

167. Western Power, Verve Energy, members of the SGFG and the Authority have worked closely to resolve Verve Energy's issues and, where appropriate and agreed by parties, have amended the draft technical rules to address these issues. The Authority has been informed by Verve Energy that Western Power has addressed all of its concerns raised in the submission and it is satisfied the Final Technical Rules incorporate or otherwise address those issues.

Appendix – Final Technical Rules

Appended as a separate document