Final Decision

Early application of the market impact component of the service target performance incentive scheme for ElectraNet

Performance Target

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AUSTRALIAN ENERGY REGULATOR

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Shortened forms

AER	Australian Energy Regulator
AEMO	Australian Energy Market Operator
MAR	Maximum Allowed Revenue
DI	dispatch interval
STPIS	Service Target Performance Incentive Scheme
TNSP	Transmission Network Service Provider
MIP	market impact parameter
MMS	market management system

1 Background

On 31 August 2007, the AER published its service target performance incentive scheme (STPIS) in accordance with clause 6A.7.4 of the National Electricity Rules (Electricity Rules). The original STPIS focused on network availability and reliability by providing incentives for transmission network service providers (TNSPs) to improve their performance against these parameters by providing rewards for improvements in performance standards and penalties for declining standards.

In March 2008, the AER amended the STPIS to incorporate a market impact component, which is called the market impact parameter (MIP), and supplements the original STPIS by targeting transmission network outages that have an adverse impact on dispatch outcomes.

The amended STPIS provides financial rewards to a TNSP for improvements in its performance measure against a performance target. This complements the financial rewards and penalties of the service target framework outlined in the original STPIS. The MIP enables a TNSP to earn an additional revenue increment of up to 2 per cent of the its maximum allowed revenue (MAR) for the relevant calendar year.

On 11 March 2010, the Australian Energy Market Commission approved the addition of clause 11.32 of the Electricity Rules which enabled the early application of an MIP. On 1 October 2010, ElectraNet Pty Ltd (ElectraNet) applied to the AER for the early application of the MIP.

2 Summary of AER decision

A summary of the AER's final decision on the values proposed by ElectraNet in its application is as follows:

- accept ElectraNet's proposed start date of 1 January 2011;
- replace ElectraNet's proposed performance target of 2100 dispatch intervals with 1862 dispatch intervals; and
- accept ElectraNet's proposed performance cap of zero dispatch intervals.

3 ElectraNet's application

In its application, ElectraNet proposed a:

- start date of 1 January 2011, which is earlier than the automatic 80 business days after the application date;
- performance target of 2100 dispatch intervals per annum; and
- performance cap of zero dispatch intervals.

4 Consultation

The Electricity Rules require the AER to publish ElectraNet's proposal for public consultation. On 15 October 2010, the AER published ElectraNet's proposal and invited written submissions from interested parties by 1 November 2010.

The only submission received was from International Power. In its submission International Power was generally supportive of the role of the MIP in promoting the availability of the transmission system at the times it is most valued by the market. International Power also submitted that ElectraNet had included some constraints in the calculation of its performance measure that should have been excluded. The AER took this into account when assessing ElectraNet's proposal.

5 AER Analysis

The AER uses the same resources and undertakes the same analysis in assessing a TNSP's performance target as it does when assessing a TNSP's performance measure.

5.1 Resources

To calculate both a TNSP's performance measure and performance target, the AER allocates each network outage constraint to the TNSP responsible for the constraint using:

1. the Market Information on Planned Network Outages, which is published every month by AEMO based on information provided by the TNSPs as required under clause 3.7A of the NER; or

2. the Network Outage Schedule, which is published by AEMO on its website based on information provided by the TNSPs; or

3. the description in the constraint set published by AEMO of why the constraint was invoked; or

4. where it is not clear from (1), (2) or (3), the published market management system data or other information provided by AEMO.

Where the information described in (1), (2), (3) or (4) indicates that more than one TNSP is responsible for a single network outage constraint (for example an outage affecting an interconnector), the number of dispatch intervals is apportioned equally between the TNSPs.

5.2 MMS Data

According to the definition of the MIP, the marginal value of a constraint is an indication of the change, at the margin, in the cost of producing electricity sufficient to meet demand brought about by a particular network outage constraint. Constraints with a marginal value less than $-10/MWh also produce a cost to the market.

When the STPIS was first introduced, the Australian Energy Market Operator (AEMO) published the marginal value of constraints within the market management system (MMS) database table DISPATCHCONSTRAINT. This table displays all marginal values as absolute values (i.e. no negative values appear).

In May 2009, AEMO began publishing the MMS database table MCC_CONSTRAINTSOLUTION. The outputs of this table are produced by re-running the dispatch engine to relax violated constraints that appear in the DISPATCHCONSTRAINT table. The marginal values produced by the MCC_CONSTRAINTSOLUTION table are considered to be a better reflection of the true marginal value of the constraints. The MCC_CONSTRAINTSOLUTION table contains both positive and negative marginal values.

The AER has advised all TNSPs subject to the MIP that MCC_CONSTRAINTSOLUTION data should be used whenever available for the purposes of calculating the performance target and performance measure. For this reason, marginal values less than $-10/MWh are included when assessing the MIP.

5.3 Exclusions

There are eight categories of constraints whereby dispatch intervals in which a constraint bound with a marginal value greater than $10/MWh (or less than $-10/MWh) are excluded from the MIP. For example, constraints used to manage the reclassification of non-credible contingency events to credible contingency events or any outage shown to be caused by a fault or other event on a 'third party system' are excluded. The complete list of exclusions provided under the scheme is available at Appendix B.

6 AER decision

Under clause 11.32.3(n) of the Electricity Rules, when assessing a TNSP's proposal for the early application of the market impact component of the STPIS, the AER must make a decision on:

- the start date; and
- whether it approves or refuses to approve the proposed values for a performance target or a cap for the MIP,

setting out reasons for the decision.

Under clause 11.32(r) of the Electricity Rules, if the AER's final decision is to refuse to approve the proposed value for a performance target, the AER must include in its final decision a substitute value which it reasonably considers will comply with the relevant requirements of the MIP.

6.1 Start date

As required by clause 11.32.3(e) of the Electricity Rules, the automatic start date of 27 January 2011 is 80 business days from the date of its application. However, as provided for under clause 11.32.3(d)(2) of the Electricity Rules, ElectraNet proposed an earlier start date of 1 January 2011.

ElectraNet has applied for an earlier start date on the basis that it will assist its internal processes. Further, in its application it stated that it will have the appropriate systems in place to facilitate the earlier start date. The AER approves the earlier start date of 1 January 2011.

The performance target included within the AER's decision will therefore remain in place until the commencement of ElectraNet's next regulatory control period on 1 July 2013.

6.2 Proposed values for the MIP

The MIP is the number of dispatch intervals where an outage on a TNSP's network results in a network outage constraint with a marginal value greater than $10/MWh (or less than $-10/MWh). Note where there is more than one network outage constraint with a marginal value greater than $10/MWh in one dispatch interval, the market impact parameter counts the dispatch interval for each network outage constraint (that is, the same dispatch interval may be counted more than once).

The AER's analysis of ElectraNet's proposed values for the MIP is set out below.

6.2.1 Performance target

The STPIS provides that the performance target must be equal to the TNSP's average performance history over the most recent five years unless the AER approves a different period that is consistent with the objectives of the scheme. ElectraNet's proposed performance target is the annual average, over the five year period from 2005 to 2009, of the number of dispatch intervals in which a network outage constraint attributable to ElectraNet bound with a marginal value greater than $10/MWh (or less than $-10/MWh).

Table 1 provides a summary of ElectraNet's proposed annual performance history which was used to calculate its proposed performance target.

Table 1: ElectraNet's proposed annual performance 2005-2009 (dispatch intervals)

Year	2005	2006	2007	2008	2009	Average
Binding intervals	17769	6902	9926	19648	4850	11819
Exclusions	15742	3888	7077	17662	4228	9719
Contribution to the performance target	2027	3014	2849	1986	622	**2100***

*The average is 2099.6, however ElectraNet proposed 2100 dispatch intervals.

The AER does not approve ElectraNet's proposed performance target for the market impact component of the STPIS. Instead, the AER's decision is to substitute the proposed value of 2100 dispatch intervals with 1862 dispatch intervals.

Around 90 per cent of the downward adjustment of the performance target was due to the incorrect inclusion of constraints that limit unavailable generation at a time of a coincident planned network outage proximate to the offline generation. Appendix B provides a detailed explanation of this class of constraint and the reasons for its exclusion under the MIP.

The reasons for the adjustments to the proposed performance target are summarised below. Details of each adjustment are provided in Appendix A.

- ElectraNet's proposed performance target included a number of binding network constraints that were used to manage outages caused by a fault or other event on a third party system. These constraints fall within exclusion clause 3 of the MIP. The AER excluded a total of 1079 dispatch intervals that were included in the calculation of the proposed performance target over the five year period on the basis that exclusion clause 3 applied. A total of 1036 of those DIs that fell within exclusion clause 3 were due to constraints that limited unavailable generation at a time of a coincident planned network outage proximate to the offline generation (see Appendix B).

- ElectraNet's proposed performance target included a number of binding network constraints that were used to manage the reclassification of non-credible contingency events to credible contingency events[1]. According to exclusion clause 2 of the MIP, constraints that are used to manage the reclassification of lines in the network are excluded from the MIP.

- ElectraNet's proposed performance target included constraint S_TITN, which was used to manage an outage on an asset providing non-prescribed transmission services on 22 August 2006. This constraint falls within exclusion clause 4 of the MIP. ElectraNet has indicated to the AER that this constraint was included in error.

- ElectraNet has advised the AER that some constraints related to network support services were included inadvertently, namely constraints NSA_S_SNUG1_05 and NSA_S_SNUG1_15. These constraints fall within exclusion clause 7.

- ElectraNet has indicated that DIs associated with constraint VSML_200 on 21 January 2006 and F_I+RREG_0400 on 14 November 2007 were also included in error.

- Several constraints were included where there was no indication in the relevant information sources (referred to under AER analysis) that these constraints were invoked at the relevant times to manage an outage. These constraints are indicated by "*Not outage related*" in the table in Appendix A.

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[1] As defined in clause 4.2.3(f) of the Electricity Rules.

ElectraNet has agreed that these counts should be excluded from the performance measure.

- Two counts associated with Constraint ID #V-S_MNSP1_E_E on 28 April 2008 have been excluded in accordance with exclusion clause 8 of the MIP (called AEMO error in the table in Appendix A). These counts were related to events described in Market Notice 27524 which states: "*The Murraylink interconnector V-S-MNSP1 has been constrained to halt the oscillating dispatch outcomes due to NEMDE non physical loss runs.*"

- For several of the included constraints the AER identified additional DIs where the constraint bound with a marginal value greater than $10/MWh (indicated by "*Missing DIs*" in the table). The addition of these counts adds 15 DIs over the five year period.

ElectraNet has agreed to all of these adjustments. Overall, ElectraNet's proposed DI count was reduced by 1188. This reduces ElectraNet's annual performance target by 238 dispatch intervals. The AER decision is to substitute the proposed performance target with 1862 dispatch intervals.

6.2.2 Performance cap

Under the STPIS, the proposed cap must equal zero dispatch intervals. In its proposal ElectraNet submitted a proposed cap of zero dispatch intervals and therefore the AER approves ElectraNet's proposed performance cap. This means that the maximum incentive payment is made when ElectraNet achieves a performance measure of zero dispatch intervals.

A.1 Appendix A: AER adjustments to ElectraNet's proposed performance measure

Constraint ID	ElectraNet's proposed DI count	AER Adjustment to DI count	Reason for adjustment	Exclusion clause	Date binding
#V-S_MNSP1_E_E	2	-2	AEMO error	8	28/4/2009
#V-S-MNSP1_I	1	-1	Third party outage	3	8/12/2006
#V-SA_I_E	2	-2	Not outage related	N/A	21/10/2008
F_I+LREG_0140	1	-1	Not outage related	N/A	7/7/2005
F_I+RREG_0400	2	-2	Included in error ("typo")	N/A	14/11/2007
F_MAIN+RREG_0130	1	-1	Not outage related	N/A	13/5/2006
F_S++HYML_L60	1	-1	Third party outage	3	8/4/2009
NSA_S_SNUG1_05	13	-13	Network support/included in error	7	22/6/2006
NSA_S_SNUG1_15	3	-3	Network support/included in error	7	21/6/2006
S>>V_TBTU_TBCG_CGTX	24	-24	Reclassification	2	26/5/2008
S>S_SNTX3A	309	2	Missing DIs	N/A	22/3/2006 and 27/3/2006
SA_HYSE2	1	-1	Not outage related	N/A	14/3/2005
SVML_000	19	-2	Not outage related	N/A	5/8/2008
S_CNHL_HAL	187	-187	Third party outage (Planned network outage and generator unavailable)	3	21/10/2007 and 22/10/2007
S_DVNP_NP1	102	-102	Third party outage (Planned network outage and generator unavailable)	3	22/10/2006

S_DVNP_NP2	390	-390	Third party outage (Planned network outage and generator unavailable)	3	6/1/2007, 7/1/2007
S_PWLG_LG1	190	-190	Third party outage (Planned network outage and generator unavailable)	3	28/7/2006, 31/7/2006, 4/11/2008
S_PWLG_LG2	106	-106	Third party outage (Planned network outage and generator unavailable)	3	28/7/2006, 31/7/2006, 4/11/2008
S_TA2_TX	23	-23	Third party outage (Planned network outage and generator unavailable)	3	17/3/2009
S_TITN	23	-23	Not prescribed transmission services	4	22/8/2006
S_TI_CB_BW4+BC4	38	-38	Third party outage (Planned network outage and generator unavailable)	3	22/3/2009
V>>S_BNSG	55	12	Missing DIs	N/A	24/5/2006, 25/5/2006
V>>S_SETB_N-2_PWKN	30	-30	Reclassification	2	20/2/2007
V>S_SETB	117	1	Missing DIs	N/A	24/3/2006
VSML_200	20	-20	Included in error	N/A	21/1/2006
VS_250	66	-41	Third party outage	3	9/11/2009
Total	**1726**	**-1188**			
Average		**-238**			

A.2 Appendix B: Exclusions

The following is a list of all exclusions from the MIP.

1. *force majeure events*
2. network constraints that are invoked to manage the reclassification of *non-credible contingency events* to *credible contingency events* as per clause 4.2.3(f) of the NER
3. any outages shown to be caused by a fault or other event on a 'third party system'—e.g. intertrip signal, generator outage, customer installation
4. outages on assets that are not providing *prescribed transmission services*
5. outages for personal safety that are not related to the activity of owning or operating a *transmission network*
6. outages that are only for the purpose of assisting with operational security, for example where a lower voltage parallel circuit is taken out of service to assist with transfers across an interconnector
7. network constraints related to network support services in accordance with clause 5.6.2 of the NER
8. *dispatch intervals* (for a *network outage constraint*) that are affected by:
    a. a manifestly incorrect input to the *dispatch algorithm* (as determined by *AEMO* under clause 3.9.2B of the NER)
    b. a constraint applied by *AEMO* that does not accurately reflect or is otherwise inconsistent with the network capability that the TNSP advised *AEMO*
    c. a scheduling error
    d. *mandatory restrictions* under clause 3.12A of the NER
    e. *AEMO* declaring the *spot market* suspended under clause 3.14.3 of the NER, or
    f. an *administered price cap* under clause 3.14.2 of the NER

A.3 Constraints affecting offline generation during coincident network outages

ElectraNet's proposed performance target incorrectly included a number of constraints that limit the dispatch of generation to zero but that generation was actually offline for a planned outage, and therefore unable to generate. This occurs because at times, the market systems indicate that a constraint limits the generation despite the generator being unavailable. If this occurs for a *planned network outage* proximate to the offline generation, these counts are **excluded** from the MIP under exclusion clause 3. If, on the other hand, a constraint limits generation at a time of an *unplanned network outage* proximate to the offline generation, dispatch intervals in which the constraint binds are **included** in the MIP.

When formulating the exclusions to the MIP, the AER recognised in its final decision that "[i]t is appropriate to exclude events from performance data where a TNSP cannot control the event or mitigate the impact of the event by adopting better

practices"[2]. The AER considers that if a TNSP undertakes a planned network outage, which is agreed with the affected generator, then there is no market impact. Note that the converse is usually the case, that is the generator takes a planned outage and the TNSP coordinates its outage of the connecting transmission line. In these circumstances if the planned network outage results in the market systems publishing that a constraint limited the dispatch of that generator, it is appropriate to exclude the binding of that constraint from the MIP.

The AER's final decision on the MIP of the STPIS also recognised that:

> *"Unplanned outages should not be excluded from performance data on the market impact component of the scheme. The market impact parameter is not exclusively aimed at ensuring TNSP's plan and coordinate outages to minimise congestion, but also to limit the duration and frequency of unplanned outages at times of high market impact or on critical network elements. Applying the parameter to forced and unplanned outages will provide the TNSPs with an incentive to minimise the duration of unexpected outages (particularly at times of high spot prices). This is consistent with the principles in clause 6A.7.4(b)(1)(ii) of the NER that the scheme should provide incentives for TNSPs to improve and maintain the reliability of those elements of the transmission system that are most important for determining spot prices".*[3]

For this reason the AER considers that for an unplanned network outage, if the unplanned network outage results in the binding of a constraint limiting the dispatch of that generator, it is appropriate to include the binding of that constraint in the MIP. However, the MIP is not confined to incentivising TNSPs to plan and coordinate outages. The MIP also incentivises TNSPs to limit the duration and frequency of unplanned outages on critical network elements.

A.4 Ramping constraints

Although it has not been a contentious matter in relation to this (or any previous) decision, the AER considers it would be useful to clarify its position on the exclusion of ramping constraints from the MIP.

AEMO invokes ramping constraints (that move from a higher level of network capability to a lower level over 30 minutes) ahead of planned network outages to avoid large step changes in power flows that can lead to price spikes. By mitigating step changes in network capability, ramping constraints can significantly reduce the market impact of outage constraints. The ramping constraints may have a market impact a short time ahead of the actual outage but this impact should be significantly less than what may occur with a step change in capability (in the absence of the ramping constraint). The market impact of ramping constraints may therefore occur over a number of dispatch intervals as opposed to the effect of a step change over one or two dispatch intervals.

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[2] AER final decision: "*Electricity transmission network service providers: Service target performance incentive scheme (incorporating incentives based on the market impact of transmission congestion)", pg 15.*

[3] AER final decision: *"Electricity transmission network service providers: Service target performance incentive scheme (incorporating incentives based on the market impact of transmission congestion)", pg 15.*

A TNSP would be disadvantaged under the MIP if ramping constraints invoked ahead of a planned outage were included in the MIP. The MIP is a count of the number of dispatch intervals in which a network outage constraint binds with a marginal value greater than $10/MWh (or less than $–10/MWh) without taking into consideration the magnitude of the market impact. A step change in the network capability, as a result of an outage could have a very large impact for only a short time, whereas a ramping constraint can result in marginal values slightly above $10/MWh for a slightly longer period but the market impact would be less.

The AER considers that ramping constraints fall within exclusion clause 8(b) of the MIP of the STPIS. Exclusion clause 8(b) captures dispatch intervals (for a network outage constraint) that are affected by a constraint applied by AEMO that does not accurately reflect or is otherwise inconsistent with the network capability that the TNSP advised AEMO. In the case of ramping constraints, the relevant network capability that the TNSP advised AEMO is not at issue. However, since ramping constraints are used to artificially constrain network capability in order to mitigate the market impact of outage constraints, the AER considers that ramping constraints do not accurately reflect network capability and should be excluded under the MIP.