Australian Energy Market Commission

RULE CHANGE

CONSULTATION PAPER

National Electricity Amendment (Secondary Trading of Settlement Residue Distribution Units) Rule 2017

Rule Proponent
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About the AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

Contents

1 Introduction

On 16 December 2016, Westpac Banking Corporation (Westpac) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission). The rule change request seeks to amend the National Electricity Rules (NER or rules) to enable the secondary trading of settlements residue distribution units (units) through the Australian Energy Market Operator's (AEMO) settlement residue auctions (SRAs or auctions).

This consultation paper has been prepared to facilitate public consultation on the rule change request and to seek stakeholder submissions.

This paper:

- sets out a summary of, and a background to, the rule change request
- identifies a number of questions and issues to facilitate the consultation on this rule change request
- outlines the process for making submissions.

2 Background

Westpac has submitted a rule change request to the AEMC that seeks to enable the secondary trading of units through AEMO's auctions.

The rule change request was informed by an informal consultation in 2016 amongst the members of the Settlement Residue Committee (SRC).[1]

2.1 Settlements residue

Price separation between regions of the National Electricity Market (NEM) creates risks for parties that contract across those regions. This is because wholesale prices are set at the regional reference price. The concept of hedging across regions and the associated risks are explained further in section 5.1.2.

Price separation occurs when interconnector capacity is not sufficient to equalise the spot price between a higher price and a lower price region. If network conditions allow it, electricity flows from a lower price region toward a higher priced one. In an unconstrained network, with unlimited capacity, this would result in perfectly coupled prices in all regions altered only by network losses. However, there is congestion in the NEM, and interconnectors do not always have enough capacity to allow for the equalisation of prices across regions.

In the case of a price separation AEMO may collect more money in the importing region from market customers than it is required to pay out to generators in the exporting region. The difference between the price paid in the importing region and the price received in the exporting region, multiplied by the amount of flow in a trading interval, is called a settlements residue. In a broader sense, settlements residue is "any surplus or deficit of funds retained by *AEMO* upon completion of *settlements* to all *Market Participants* in respect of a *trading interval,* being either *inter-regional settlements residue* or *intra-regional settlements residue*."[2]

Inter-regional settlements residue can also be negative if counter-price flows occur. Counter-price flows refer to a phenomenon, when electricity flows from the higher priced region to the lower priced one. There are several reasons why this phenomenon can occur, including issues with, and errors in, the dispatch process, metering issues and non-compliance with dispatch targets.

The principles of allocation, distribution or recovery of the settlements residue are set by clause 3.6.5 of the NER. These principles are different for regulated interconnectors and interconnectors that are operated by market network service providers (MNSPs). Settlements residue auctions described in section 2.2 refer to the allocation, distribution

1 The SRC is a committee that is required to be established under 3.18.5 of the NER and is comprised of persons representing generators, market customers (retailers), transmission network service providers (TNSPs), government, traders, retail customers and AEMO.

2 Chapter 10 of the NER.

or recovery of inter-regional settlements residue attributable to regulated interconnectors.

2.2 Settlements residue auctions

The principles and requirements of settlements residue auctions are set out in rule 3.18 of the NER. However, the auction rules themselves are developed by AEMO in accordance with the principles prescribed in the NER.[3]

2.2.1 Units and auctions

Current auction rules[4] define units that refer to a particular direction of an interconnector (unit category) for a particular calendar quarter. There are six unit categories referring to both directions on interconnectors between Queensland and New South Wales, New South Wales and Victoria and Victoria and South Australia.[5] The maximum number of units in a category is determined and published by AEMO.[6] It is based on the nominal capacity of the interconnector for each direction.[7]

The total number of units in a category that refer to a calendar quarter (also called the relevant quarter) represents the total value of settlements residue accrued in that calendar quarter in that unit category. For example the 550 units available from New South Wales to Queensland for the second calendar quarter[8] of 2017 represent the total value of inter-regional settlements residue accumulated in that direction, during that time period.

AEMO divides the maximum number of units by twelve, and holds twelve auctions once a quarter, ahead of the relevant quarter. One twelfth (1/12) of the available units is auctioned off at each auction.

3 Clause 3.18.3(b) of the NER

4 See AEMO's website at https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Settlements-and-payments/Settlements/Settlements-Residue-Auction/Rules

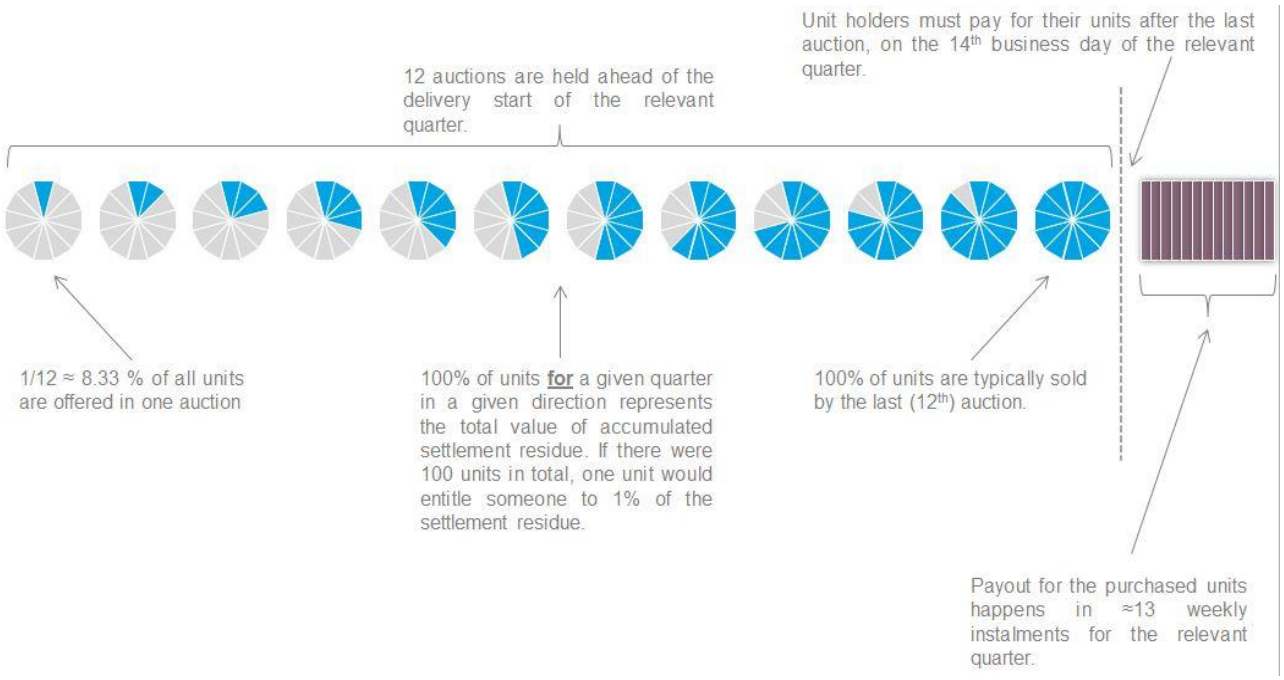
5 4.2 of the Settlements Residue Auction Rules

6 See AEMO's website: https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Settlements-and-payments/Settlements/Settlements-Residue-Auction/Number-of-units

7 The term interconnector throughout this consultation paper is understood as directional interconnector defined in 3.18.1(c) of the NER. In other words, if there are more than one regulated interconnectors between two adjacent regions, they constitute a single interconnector

8 The second calendar quarter refers to the time period between 1 April and 30 June.

Figure 2.2.1 Settlements residue auctions



Auction participants may submit bids for the price and quantity of units they are willing to purchase. The bid price must be greater than or equal to zero.

The auction has a common clearing price for each unit category and relevant quarter. The auction clearing price is set at the price of the lowest bid that was allocated a unit. All successful participants then pay this price for the units they acquire at the auction. If demand for units is less than the number of units offered at the auction, the clearing price is zero.

Auction participants may start participating in auctions 3 years (or 12 calendar quarters) ahead of the start of the relevant quarter, however, are only required to pay AEMO for the units they purchased by the 14th business day of the relevant quarter.[9] AEMO must then distribute the proceeds from the auctions to the relevant network service providers.[10]

2.2.2 Distribution of instalments

Settlements residue is calculated on a half-hourly basis, and aggregated on a weekly basis. After subtracting the auction expenses, AEMO pays the amounts proportional to the purchased units in weekly instalments. Payments are aligned with payments for the spot market (i.e. approximately five weeks after electricity flowed through the interconnector).

Generally, price differences between regions arise when the interconnector is constrained; however, price differences in regions may occur even if the interconnector

9 Clause 10.3 (c) of the Settlements Residue Auction Rules

10 Clause 3.18.4(a) of the NER

between two adjacent regions is not operating at full capacity. These types of price differences tend to be less significant in magnitude. These differences are caused by inter-regional transmission losses. However small the price difference (and hence the weekly aggregated value) is between two adjacent regions, the payout for the corresponding units must not be less than $10 per unit.[11]

As discussed in section 2.1, negative settlements residue can and does occur between regions. The risk of this occurring and reducing payouts used to sit with the unit holders. Where there was negative settlements residue in a trading interval, the residue was recovered (deducted) from the weekly positive settlements residue payout. Transmission network service providers (TNSPs) were only responsible for any remaining negative settlements residue that was not recoverable from the unit payout.

Since 1 July 2010, however, auction participants do not bear the cost of negative settlement residues. It instead is recovered from the TNSP to which electricity was physically flowing (in the lower price region) on a weekly basis.

2.2.3 Flow-on effects on consumers

As discussed in section 2.2.1 and 2.2.2, TNSPs receive the auction proceeds, but are also financially responsible for negative settlements residue for the relevant quarters. The auction proceeds form part of the TNSPs' regulated revenue, and any negative settlements residue is paid from this revenue.

As the TNSPs' regulated revenue is set by the Australian Energy Regulator (AER), when auction proceeds decrease or negative settlements residue increase, the transmission use of system (TUOS) charges consumers need to pay directly or through a retailer's supply charges will increase.

It would be expected that the auction proceeds for an importing region which is forecast to have higher prices than the other interconnected, exporting region would be greater than for a region which is expected to have lower prices. Therefore the prices, all else being equal, paid by consumers located in usually importing, higher price regions should be lower as a result of a lower TUOS component in the price and increased auction proceeds.

On the other hand, negative settlements residue should also increase prices in lower price regions, because the importing TNSP is responsible for these amounts. In these cases, it would be expected that this TNSP would receive lower auction proceeds (as it would be forecast that the region is generally the lower priced region) and would also be responsible to cover any negative settlements residue arising from the counter-price flows.

11 See Schedule 1, Clause 6.1 of the Settlements Residue Auction Rules.

2.3 Secondary trading

Currently, the rules neither promote nor prohibit the secondary trading of units in general. However, the rules do prevent AEMO from allocating auction proceeds to anyone but the relevant TNSPs.

To date, secondary trading of units is only possible via AEMO's assignment process or bilateral or over-the-counter (OTC) contracts. No organised market or trading platform exists for the purpose of facilitating trade.

AEMO, as part of the Settlement Residue Auction Rules, developed an Auction Participation Agreement (APA). The APA is a contract which auction participants must enter into with AEMO.[12] The APA states that assignment of units to other auction participants may only happen with AEMO's consent.[13] The process and requirements for assignment are set out in a guide published by AEMO and clearly states that it is "to be used as a guide only"[14]

For an assignment to occur both the assignor and the assignee must send letters on letterhead to AEMO requesting the transfer of rights and obligations associated with the units. The parties must also include the reasons why the assignment is being requested. After a successful assignment, all rights and obligations are passed on to the assignee from the assignor, i.e. the assignee becomes responsible for paying the auction proceeds to AEMO and is entitled to the unit payouts.

In addition to the assignment process prescribed by AEMO, parties are also able to trade units amongst themselves through bilateral, private contracts. In this case, the counterparty facing AEMO is not changed, i.e. the original market participant who purchased units through the auction would be responsible to pay the clearing price from the auction in which the units were purchased and would receive the unit pay out. In such a case, the successful auction participant would enter into a contract with another legal or natural person that is not necessarily an auction participant. The seller of the units could agree to transfer future payments received during the weekly pay outs to the buyer in exchange for a payment for the units. AEMO would have no visibility over these contracts.

2.4 Related work

The AEMC has not previously considered a rule change request relating to the secondary trading of units, but there have been changes in relation to the settlements residue auctions, and the calculation, distribution and recovery of settlements residue.

12 See 3.18.2 (b) of the NER.

13 Schedule 1, Clause 14.4 (b) of the Settlements Residue Auction Rules

14 AEMO, Settlement Residue Distribution Agreement Assignment Guide, July 2016.

2.4.1 The National Electricity Code

The NER commenced on 1 July 2005, replacing the National Electricity Code (NEC). Simultaneously the roles and functions of the National Electricity Code Administrator (NECA) were replaced by the AEMC and the Australian Energy Regulator (AER). The NEC and the NER were broadly similar in content and format and the NER has, since its inception contained a chapter about settlements residue auctions.[15] However, settlements residue auctions were not always part of the NEC.

The first version of the NEC was published on 19 November 1998. In December 1998, the NEM started its operation, but the introduction of settlements residue auctions did not come about for over half a year later, in June 1999, with the second amendment to the NEC. The Australian Competition and Consumer Commission (ACCC) granted an interim authorisation in June 1999 to NECA for amending the NEC. In December 1999, the ACCC approved the final version of these changes.[16]

No auctions were held, and inter-regional settlements residue was distributed to TNSPs before June 1999.

2.4.2 Recovery of negative inter-regional settlements residue

On 30 March 2006, the AEMC made a rule which allowed for the recovery of negative inter-regional settlements residue from auction proceeds rather than from auction fees. The rule commenced on 1 July 2006.[17]

2.4.3 The Congestion Management Review

On 5 October 2005, the Ministerial Council on Energy directed the Commission to review congestion management in the National Electricity Market (NEM). The final report[18] was published in 16 June 2008 and recommended the following changes:

- reducing uncertainty for unit holders by making TNSPs exclusively responsible for recovering negative settlements residue
- changing the trigger of $6000 to $100,000 for AEMO's intervention for limiting negative settlements residue per trading interval
- allowing units to be auctioned up to three years in advance.

After a full consultation, AEMO amended the Auction Rules which allowed auctions from June 2010 to relate to relevant quarters three years ahead. AEMO's intervention

15 Rule 3.18 of the NER.

16 ACCC, Final Determination, Applications for Authorisation, National Electricity Code, Settlements Residue Auction Process, 22 December 1999

17 AEMC, National Electricity Amendment (Negative Inter-regional Settlements Residue) Rule 2006

18 AEMC, Congestion Management Review, Final Report, June 2008

threshold was also changed in AEMO's procedures with an effective date of 1 July 2010.

2.4.4 Negative Inter-regional Settlements Residue Amounts

On 13 August 2009 (informed by the recommendation previously made in the Congestion Management Review in 2008) the AEMC made a rule that allowed for the full recovery of negative inter-regional settlements residue from TNSPs. The rule commenced on 1 July 2010.[19]

2.4.5 Management of Negative Inter-regional Settlements Residues

On 20 February 2014, the AEMC published its final report on its review of AEMO's management of negative inter-regional settlements residue. This market review confirmed the need for a $100,000 intervention threshold (which AEMO had implemented). Further, the review made recommendations related to the processes used by AEMO for interventions, forecasts and estimations related to negative settlements residue. The AEMC has not reviewed negative inter-regional settlements residues generally, only AEMO's management of the negative inter-regional settlements residue.

2.4.6 Five Minute Settlement

On 19 May 2016 the AEMC initiated its assessment of a rule change request aimed at reducing the time interval for settlement in the wholesale electricity market from 30 minutes to five minutes. Because the rules prescribe the calculation of the settlements residue on the same basis settlement is done in the wholesale electricity market, if that interval is changed, the methodology of settlements residue calculation would also change.

The difference between the time interval of dispatching and settlement in the wholesale market is a contributor to the occurrence of negative inter-regional settlements residue. This is because there are six (five minute) dispatch intervals in a half-hourly trading interval that has different prices and different volumes. Because the wholesale price on which the calculation of settlements residue is based on is equal to the arithmetic and not volume weighted average of five-minutes prices, a single large reverse price difference with only a small interconnector flow may create a counter-price flow for the whole half-hourly trading interval.

19 AEMC, National Electricity Amendment (Negative Inter-regional Settlements Residue Amounts) Rule 2009

3 Details of the rule change request

This chapter provides a summary of the rule change request. The request is available on the AEMC's website.[20] Westpac has proposed in its rule change request to allow, but not mandate, for the introduction of secondary trading via the same auction process already facilitated by AEMO.

Westpac's rule change request set out the details of the issues and the changes it proposed to be made to the NER to allow for a secondary trading mechanism to be implemented in the existing settlement residue auction. Westpac also acknowledged that major amendments would also be required to the auction rules in order to facilitate secondary trading within the auction.

If the rule is made, changes required to the auction rules, would be determined by AEMO and the settlement residue committee (SRC) through the rule consultation procedures.[21] Therefore, consideration of the merits of such changes is only within scope of the AEMC's assessment of the rule change request to the extent of assessing the possible outcomes that changes to the NER may facilitate.

3.1 Rationale for the rule change request

In its rule change request, Westpac provided its rationale for the rule change. A number of key issues raised in the rule change request are summarised as follows:

- **lack of liquidity and anonymity:** Westpac estimated that the volume of units traded bilaterally is less than 1% of the volumes sold on AEMO auctions. This illiquidity reduces the efficiency of risk management, because positions may be difficult to optimise (i.e. reduce or increase the number of units in a portfolio if new information suggests price differentials will be lower or higher than expected) once units are purchased. Additionally, bilateral trade necessarily reveals the identity of the seller and the buyer, while also revealing their hedging strategies. This is a risk that retailers and generators may not want to take.

- **credit and settlement risk:** bilateral trading of units increases counterparty credit risk that secondary buyers and sellers need to manage.

- **ease of execution:** Westpac stated that secondary trading of units is hindered by the specific requirements around the assignment of units, which would be significantly simpler if such trading could occur through auctions.

- **market preference for trade at auction:** due to internal procedures (such as the timing of planning and risk review processes aligned with settlements residue auctions) auction participants are reluctant to enter into bilateral agreements.

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20 For Westpac's rule change request see: http://www.aemc.gov.au/Rule-Changes/Secondary-trading-of-settlement-residue-distributi

21 Clause 3.18.3(d) and (e) of the NER

- **market inefficiency:** illiquidity and practical barriers to secondary trading may lead to the formulation of incorrect price signals.

- **auction participant default:** the risk of an auction participant defaulting before paying for the units it purchased could be reduced by the introduction of a liquid secondary market. This is because participants would be able to sell their unwanted units (if they are experiencing financial difficulties) more easily, hence reducing the risk of default and the resale of their units by AEMO at another auction, at a lower price.

The rule change request includes a proposed rule.[22]

3.2 Proposed solution

This section provides a summary of Westpac's proposed solution to the issues it has raised in its rule change request.

3.2.1 Allowing, but not mandating, for the introduction of secondary trading via auctions

Westpac stated that allowing for the introduction of secondary trading of units via the same auction process already facilitated by AEMO would increase the liquidity of those units. This would, in turn, improve the efficiency of units as an inter-regional hedging tool by providing better opportunities for participants to manage portfolio risks.

The rule change request did not propose to mandate the introduction of a secondary trading mechanism. Rather, it was aimed at removing the existing barriers to secondary trading through the auctions that exist in the NER. Prior to any secondary trading mechanism being included in the auction procedures, AEMO and the SRC would be required to develop the mechanism and consult with affected stakeholders.

3.2.2 The auction mechanism

In its rule change request, Westpac provided an explanation of what principles and mechanisms may follow from the proposed changes in the NER.

Facilitating transactions

In Westpac's rule change request, it provided an example of a mechanism that which could be implemented to allow secondary trading through the current auction process. The mechanism would allow auction participants to offer their previously purchased "primary units"[23] for sale on subsequent auctions. In theory, AEMO would cancel the

22 A copy of the rule change request may be found on the AEMC website, www.aemc.gov.au.

23 Through this consultation paper primary units referred to units that were originally offered for sale by AEMO. Secondary units refer to units that were previously purchased from AEMO but are being sold by a seller other than AEMO.

units belonging to the "secondary seller", then reissue them to the "secondary buyer", independently.[24] Under this mechanism, primary and second units would be simultaneously offered for sale at the same auction.

Payments to TNSPs and auction participants

Generally, the auction proceeds paid to TNSPs would not be influenced by the price secondary units are traded at unless this also impacts on the clearing price for primary units. TNSPs are and would continue to be entitled to the amount defined by the unit price realised the first time it was auctioned.

The secondary trade transaction is between the secondary seller and the secondary buyer. Therefore, all profits or losses are borne by the secondary seller and would not impact on the primary unit auction proceeds paid to TNSPs.

Currently, the NER only allows auction proceeds to be paid to TNSPs. Therefore, the rule change request sought an amendment that would allow for the payment of auction proceeds to either TNSPs (in the case of primary units) or secondary sellers (in the case of secondary units).

Managing default

Westpac stated that its rule change proposal "clarifies that if AEMO incurs a shortfall after recovering costs from the proceeds of auctions, then recovery of the shortfall would align with the distribution of surpluses and recovery of negative settlement residue, i.e. it resides with the relevant Network Service Provider".[25] In other words, if an auction participant that previously purchased secondary units from a secondary seller defaults, its units will be offered for sale at a subsequent auction. If the subsequent auction's clearing price is lower than the auction price at which the defaulting participant bought its units, the shortfall will be recovered from the TNSP entitled to the auction proceeds.

3.2.3 Stated costs, benefits and potential impacts

Westpac submitted a summary of costs, benefits and potential impacts associated with the rule change request. These are as follows:

- **costs to AEMO**: based on AEMO's estimation the costs for implementation would be between $195,000 and $285,000
- **benefits to sellers and buyers:** anonymity, increased liquidity, simplified execution and reduced default, credit and settlement risk arising from secondary trading would benefit secondary sellers. If sellers are able to sell more easily,

24 In practice, however, the two transactions cannot happen independently, unless the secondary seller defaulted and its units were offered for sale at a subsequent auction by AEMO. This makes AEMO a de-facto central clearing counterparty, an effective intermediary between secondary seller and buyer of units.

25 Westpac, rule change request, 16 December 2016, p.3

buyers could also receive the same benefits and be able to dynamically optimise the risks created by their changing portfolio

- **potential impacts:** the value of units may not change significantly. The overall supply of units would not change, because only units that were previously bought could be offered for sale. As a result, prices should not be affected. If increased liquidity is strongly valued by participants that may cause an increase in prices. An incentive for bidding and purchasing units longer periods ahead may appear, as positions in units may be more easily managed.

4 Assessment Framework

The Commission's assessment of this rule change request must consider whether the proposed rule meets the national electricity objective (NEO).

From 1 July 2016, the NER, as amended from time to time, apply in the Northern Territory, subject to derogations set out in Regulations made under the Northern Territory legislation adopting the National Electricity Law (NEL).[26] Under these Regulations, only certain parts of the NER have been adopted in the Northern Territory.[27]

As the proposed rule relates to parts of the NER that currently do not apply in the Northern Territory, the Commission will not assess the proposed rule against additional elements required by the Northern Territory legislation.[28]

4.1 Rule making test

Under the NEL, the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.[29] This is the decision making framework the Commission must apply.

The NEO[30] is:

> "To promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to-
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system"

The NEO captures the three dimensions of efficiency: productive (efficient operation), allocative (efficient use of) and dynamic efficiency (efficient investment).[31]

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26 National Electricity (Northern Territory) (National uniform Legislation) (Modifications) regulations

27 For the version of the NER that applies in the Northern Territory, refer to: http://www.aemc.gov.au/Energy-Rules/National-electricity-rules/National-Electricity-Rules-(Northern-Territory).

28 National Electricity (Northern Territory) (National Uniform Legislation) Act 2015

29 Section 88 of the NEL

30 Section 7 of the NEL

31 Productive efficiency means goods and services should be provided at the lowest possible cost to consumers; allocative efficiency means that the prices of goods and services should reflect the cost of providing them, and that only those products and services that consumers desire should be provided; dynamic efficiency means arrangements should promote investment and innovation in the production of goods and services so that allocative and productive efficiency can be sustained over time, taking into account changes in technologies and the needs and preferences of consumers.

Based on a preliminary assessment of this rule change request, the Commission considers that the relevant aspects of the NEO are the efficient investment in and use of electricity services with respect to the price of electricity.

4.2 Proposed assessment framework

To determine whether the proposed rule would likely to promote the NEO, the Commission will assess the rule change request against an assessment framework. The framework may be refined during the rule change process. It should be noted that the design, operation and effectiveness of the units and auction process is being examined by the Commission only to the extent necessary to inform its assessment of the appropriateness of allowing secondary trading

At this stage, the Commission is seeking stakeholder views on its proposed assessment framework which includes the following criteria:

- **Design of units:** units were designed to allow market participants to manage the price risks associated with operating in more than one region of the NEM. Where units provide a risk mitigation tool, a more liquid secondary market may provide market participants a greater ability to mitigate their price risk. The Commission will examine if units either are not being used as a risk mitigation tool or provide only minimal or imperfect risk mitigation. Whether a secondary market in units facilitated through the AEMO auction process may limit the evolution or innovation of other financial products which may provide an enhanced risk mitigation tool will also be looked at.

- **Efficient trade in electricity across interconnectors:** to promote efficient outcomes in an electricity market which includes electricity trading over several regions, it is necessary for mechanisms or instruments to exist which allow market participants to effectively operate in more than one region. This includes, but is not limited to, the ability to manage the risks associated with price differences between the regions in which the market participant operates. The ability of market participants to more easily access a secondary market for these mechanisms or instruments may lead to more efficient outcomes in respect to the management of inter-regional risks and therefore be in the long-term interest of consumers.

- **Value maximisation:** a more liquid secondary market may result in increased value of the underlying instrument. In the case of units, an increase in the value may result in increased auction proceeds which flow through to the TNSP. The TNSP then passes these auction proceeds onto its consumers therefore resulting in lower charges for consumers. Alternatively, a more liquid secondary market may maximise value for secondary sellers and not the TNSP. These secondary sellers could include retailers or traders. In the case of retailers, this may lead to the retailers' customers benefiting through lower costs. In the case of traders, where there are no associated electricity consumers, the value may pass-through to private shareholders. This may also be an efficient outcome of a secondary market and provide long term-benefits to consumers.

- **Efficient allocation of risk:** the rule change request only seeks to change the NER to provide an option for a secondary market through the AEMO auction process rather than prescribing a secondary market to be created. However, in assessing the rule change request it is necessary to assess the allocation of risk associated with the current auction process between the TNSP, unit holders and other market participants operating across multiple regions. It is also necessary to examine how this risk allocation may be impacted by the possibility of a secondary market through the AEMO auction process. It is necessary to assess whether the risk allocation is efficient in relation to being allocated to the party that has the information, ability and incentives to best manage the risks.

- **Competition:** numerous market participants participate in the AEMO auction process for units, including various retailers. Therefore, the Commission will examine if there are any impacts on retail competition that may arise in relation to the rule change request both in terms of access to units and other risk mitigation tools.

- **Costs and benefits:** any likely benefits of the proposed rule will be balanced against any additional costs that may arise as a result of the proposed rule. In this case, these costs would include the costs of developing new auction rules, AEMO system and implementation costs and likely increased auction fees.

The proposed rule will be assessed against the relevant counterfactual of not making the proposed change to the NER. That is, against the current situation where the NER does not allow secondary trading through AEMO's auction process.

4.3 Making a more preferable rule

Under section 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

5 Issues for Consultation

Taking into consideration the assessment framework, a number of issues have been identified for initial consultation. Stakeholders are encouraged to comment on these issues as well as any other aspect of the rule change request or this paper, including the proposed assessment framework.

As previously indicated, the Commission is considering the broader aspects of the underlying design, operation and effectiveness of the units and the AEMO auction process only to the extent necessary to ensure the accuracy of the Commission's understanding of these broader issues and to inform its assessment of the appropriateness of allowing secondary trading.

5.1 Materiality of the issue and potential benefits of implementation

5.1.1 Mechanisms considered for distributing settlements residue

The core issue raised by Westpac is that the current secondary market of units is illiquid and therefore a change to the NER is warranted to facilitate a more liquid market.

Initial solution

As briefly discussed in section 2.4.1, inter-regional settlements residue has not always been auctioned off in the NEM. In its 1997 determination[32] regarding the NEC (which was still under development at the time), the ACCC decided to remove the provisions that would have allowed for the setup of an auction mechanism to be operated by the National Electricity Market Management Company (NEMMCO).[33]

The ACCC considered that "market based solutions should be adopted where possible, thereby avoiding contrived or centrally administered solutions, and avoiding non-commercial entities taking trading roles in the market."[34] Further, Integral Energy and the Tasmanian Government in their submissions to the 1997 ACCC determination contended that "while NEMMCO maintains the facility it may stifle the market development of innovative financial products and services."[35]

The first version of the NEC that was in force at NEM start, therefore, did not contain references to an auction mechanism. In line with the ACCC's 1997 determination, inter-regional settlements residue was initial distributed to the TNSPs.

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32 ACCC, Determination, Applications for Authorisation, National Electricity Code,10 December 1997

33 NEMMCO was the former market operator of the NEM. From 1 July 2009 NEMMCO ceased operations and its role transitioned to AEMO.

34 Ibid p. 90

35 Ibid p. 87

Other proposed solutions before market start

In addition to the proposals considered by the ACCC in 1997 in relation to the auction mechanism, there were other solutions proposed before market start for distributing settlements residue.[36] One of the proposals included returning the residue directly to retailers or generators on a pro-rata basis related to their load or generation during the time intervals when the residue accrued. The mains reasons for rejecting this option were that:

- settlements residue was a result of a transport related issue and it was not clear why retailers or generators should be entitled to it
- there was no incentive for either a retailer or generator to pass revenues on to consumers.

As a result of the above two reasons, this option was seen as not being effective or transparent.

However, this type of mechanism may have allowed for a market-based solution to evolve allowing participants to manage inter-regional risk. In such a case, given the absence of a regulated mechanism, demand for a risk management tool in the market may have resulted in a bilateral market or trading platform providing for a product which would reflect how different market players valued that residue.

Another proposal raised in the 1997 determination was to use inter-regional settlements residue to ease network constraints through increased investment. Constraints on interconnectors and price differences between adjacent regions provide investment signals for expanding the capacity of those interconnectors, hence reducing price differences between regions. This proposal was rejected on the basis of the difficulty in deciding who would become the owner of the interconnectors and who would receive the settlements residues, as well as doubt over whether network augmentation would be the optimal solution to the original problem.

Post market start solution

The ACCC examined the issue of inter-regional settlement residues again in December 1999. The final determination of the ACCC in 1999 approved the introduction of settlements residue auctions to the NEM[37] and was based on a submission by NECA to change the NEC. NECA made the submission based on previous consultation with NEMMCO and other market participants.

36 Ibid p. 93

37 Based on an interim authorisation, auctions were held commencing in August 1999.

The ACCC reiterated from the NECA submission that "the settlements residue process is designed to:

- facilitate inter-state trade in electricity, and
- increase retail competition by giving retailers the ability to manage inter-regional trading risks."[38]

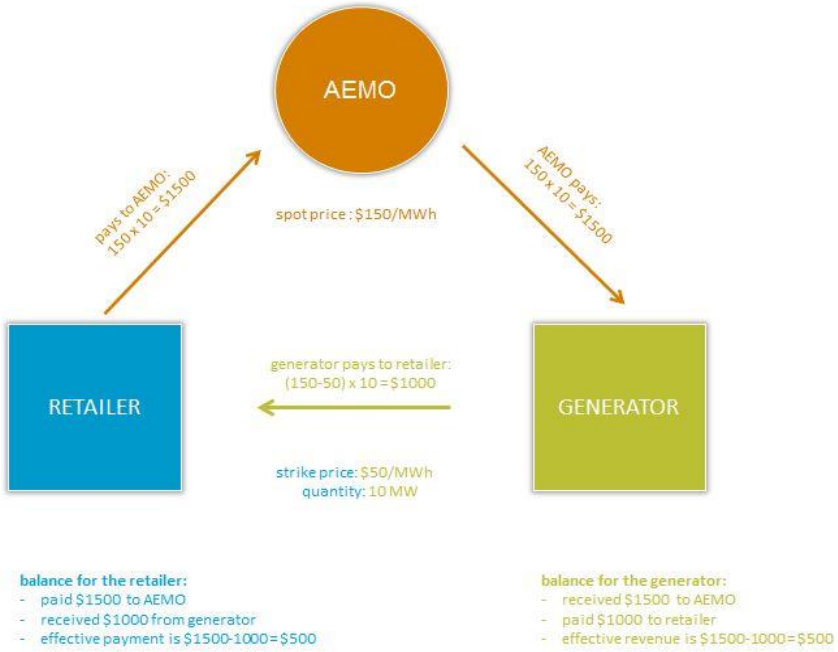
On this basis, the ACCC approved the amendment to the NEC which introduced the auction of units to market participants.

5.1.2 Efficient inter-regional hedging and unit design

Hedging within a region

If a retailer was to enter into a base load swap contract with a generator located within the same region, they would agree on a quantity referring to the size of the load and a strike price. If the spot price is above the strike price, then the generator would pay the retailer the product of multiplying the agreed quantity by the price difference between the spot price and the strike price. In cases where the spot price was below the strike price, the retailer would pay the generator. As a result, the price difference would simply flow through AEMO to the generator. Figure 5.1 reflects an example of the cash-flows between the parties for a base load swap contract.

Figure 5.1 Hedging within a region



Hedge contracts within a region are generally directly between counterparties (bilateral trade) or through a futures exchange (the ASX for example).

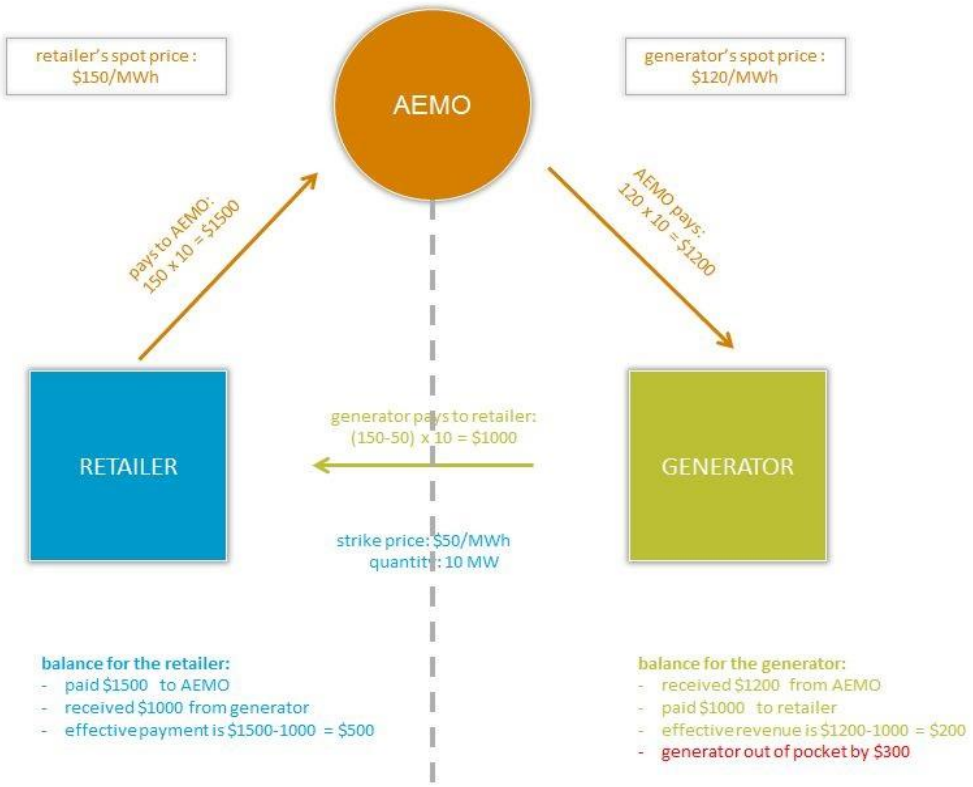
Hedging across regions

If a retailer would like to enter into a hedging contract with a generator located in another region, they would have to agree on which region's spot price would form the strike price for the contract. If the strike price for an inter-regional hedge is based on the spot price of the region the retailer is located in, it creates "basis risk" for the generator.

Basis risk arises where there is a price separation between the generator's region and the retailer's region and the retailer's regional spot price is higher than the generator's. In these circumstances the generator would lose money on the contract. This is because the price difference between the strike price and the spot price in the retailer's region would be greater than the price difference between the strike price and the spot price in its own region. Contracting across regions may result in price differences not flowing through to the generator.

This basis risk also would hold for a retailer where the strike price used is that in the generator's region rather than the retailer's.

Figure 5.2 Hedging across regions



38 ACCC, Final Determination, Applications for Authorisation, National Electricity Code, Settlements Residue Auction Process, 22 December 1999, p. ii

In the example in figure 5.2, price separation between regions is responsible for the generator's loss. The $30/MWh difference in the spot price, multiplied by the 10 MW load supplied across regions, is equal to a loss of $300. If the interconnector between these two regions was never constrained and electricity flowed between the regions at the interconnector's nominal capacity, buying 10 units, equalling 10 MW would provide a firm hedge against this difference. This is a result of the settlements residue equalling the price difference ($30/MWh) multiplied by the number of units purchased (10) which is $300.

Hedge contracts across regions may exist in the form of bilateral trade, where at least one of the counterparties would need to manage the risk of price separation, typically by purchasing inter-regional settlements residue distribution units.

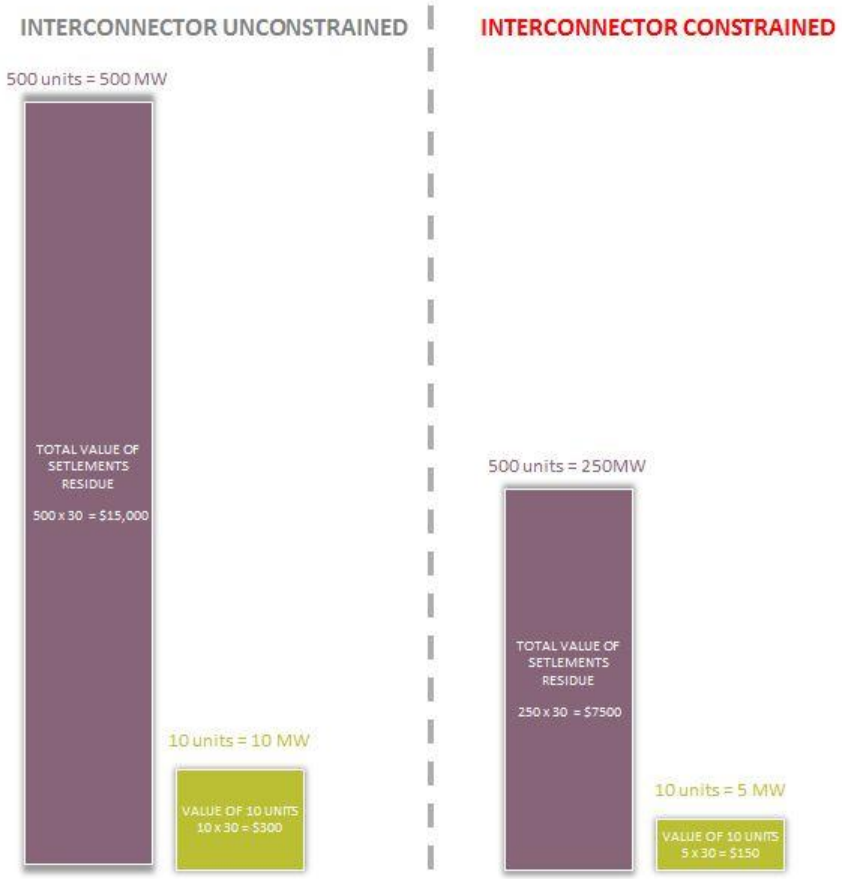
ASX currently offers inter-regional swap contracts for a premium (spread). Hedging across regions on the ASX would involve buying a swap contract in one region and selling in the other. This can be problematic in regions where liquidity on the ASX has been traditionally quite low, such as in South Australia.

The firmness of hedging

As discussed in section 2.2.1, the number of units for each interconnector direction is based on the interconnector's nominal capacity. This means that one unit would be equal to one MW capacity and would provide close to a perfect and firm hedge if the interconnector was always operating at its nominal capacity.

In practice, however, interconnectors are frequently constrained. Figure 5.3 illustrates the difference between how units could serve as a hedging tool based on the previous example on both an unconstrained and a constrained interconnector with a nominal capacity of 500 MW with 500 available units. If the interconnector is constrained, it can deliver less electricity from the lower priced region to the higher priced region. Therefore, the proportion of the value that 10 units represent is lower. In this example, it only represents 5 MW of capacity (i.e. the interconnector is only operating at 50 per cent of its nominal capacity).

Figure 5.3 Constrained versus unconstrained interconnector



The firmness of an inter-regional hedge (i.e. the coverage it can provide against price differences between regions) is best measured by the ratio between units and their capacity values in MW. On an unconstrained interconnector, this ratio is 100 per cent. When the interconnector is constrained this ratio will fall to less than 100 per cent and when the interconnector is out of service this ratio would fall to zero. In the example above, the ratio is 50 per cent as 1 unit corresponds with only 0.5 MW capacity.

Inter-regional hedging by using units may, therefore, be a high-risk exercise as interconnector constraints and price differences may be difficult to forecast. In the example above, a generator would need to have perfect foresight of the constraints and procure 20 units instead of ten, in order to protect its revenue against price differences across regions.

Further, on an unconstrained interconnector, inter-regional hedging would provide protection against both the magnitude of price difference and the flow between regions.

Forecasting future value

Auction participants must forecast the possible total value of settlements residue that is to be accumulated in the future. The price participants are willing to pay at the auctions should reflect this value.

AEMO specifically indicates that there are several variables affecting inter-regional settlements residue and therefore, participating in auctions is financially speculative and carries a number of risks.[39] The higher risk nature of the units is due in part to the difficulty in forecasting the flow on an interconnector at any time, what the price separation may be at the time of the flow over the interconnector and whether, due to other market participant behaviour or circumstances, counter-price flows may occur.

Further given, the likelihood of the interconnector being constrained during a time when there is a price separation between regions, the units provide an imperfect hedge. However, the units do provide some insurance to participants that operate across the two regions. Therefore, it would be expected that where units provide value as an inter-regional hedge, the unit price would reflect the insurance nature of the product.

The ratio between auction proceeds and payouts in the NEM over time is shown in Figure 5.4.

Figure 5.4 Unit proceeds versus payout

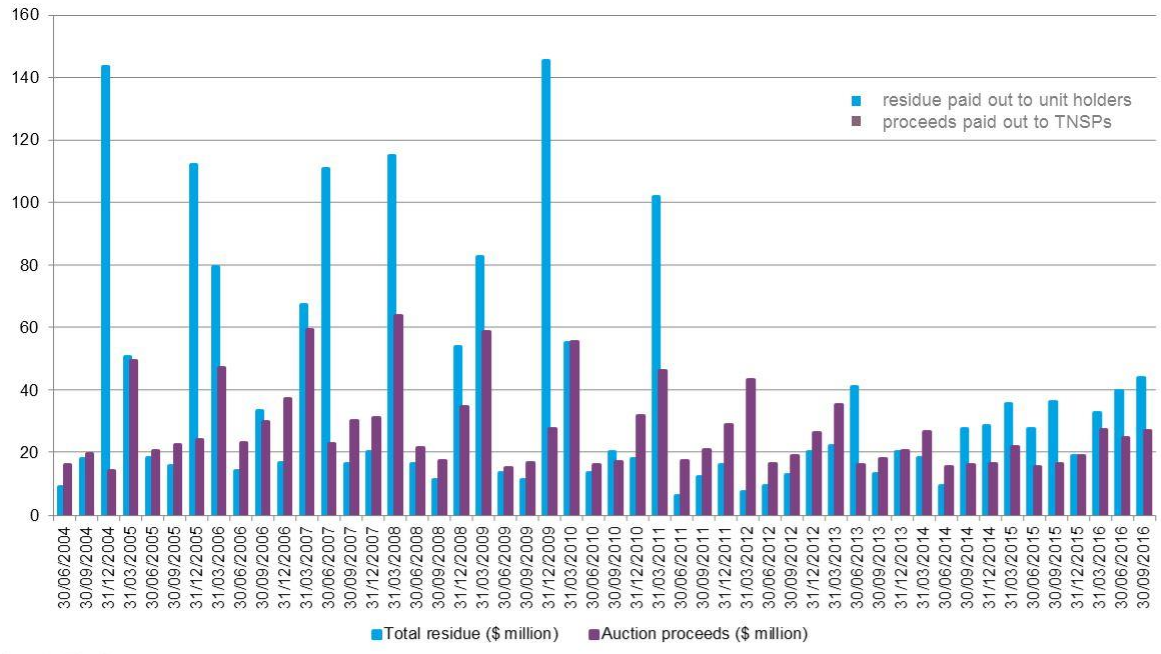


Figure 5.4 illustrates that no clear relationship or trend appears between payouts and auction proceeds over the past 12 years. It appears that market participants have taken into account the non-firm nature of the units since the auctions commenced.

However, where the units are seen as a type of insurance against inter-regional price separation one would expect the price paid for units to include a premium over the payout amount. Based on the ratio between the actual auction proceeds and the unit payouts, this does not appear to be the case in most instances.

39 https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Settlements-and-payments/Settlements/Settlements-Residue-Auction/Guide-to-settlements-residue-auction

Given the high risk and volatility of these units, it would be expected that the forecasting and trading strategy of participants may include several elements (and internal stakeholders) and factors including the need to align forecasting and trading strategies with corporate risk and hedging strategies. At this time, it is unclear how participants evaluate these units in light of their corporate risk and hedging strategies and how they are addressed through individual market participants' financial accounts. The way in which different stakeholders and different classes of stakeholders may address these issues, may not only impact on the effectiveness of the underlying unit, but also on the benefits that may accrue through a liquid secondary market.

Issue 1 Efficient unit design

1. **Does the current design of units remain appropriate for its original purpose (providing a means for inter-regional hedging and facilitating inter-regional trade)?**

2. **If the current design of the units and auction process is no longer appropriate, what improvements would be necessary for them to serve the original purpose?**

3. **Has the underlying purpose of the units and auction process changed over time from the original purpose as set out by the ACCC in its 1999 determination?**

4. **How accurately can the value of units be forecasted at the time of the auction process? What factors influence trading strategy decisions when units are procured?**

5. **Are units considered akin to a type of insurance from inter-regional price differences? If so, would market participants expect the unit price for units to reflect a premium over the expected payout from the units?**

6. **What process and considerations does a market participant examine in relation to corporate strategy and risk management structures in determining how it will participate in the auction process?**

7. **Where a market participant participates in the current bilateral secondary trading of units, are there any other processes or consideration that it takes into account besides those outlined in (6) above?**

8. **How are units addressed by a market participant in relation to its financial accounts, i.e. are these units treated the same or differently to other hedging instruments for accounting purposes?**

5.1.3 Liquidity, auction design and collateralisation

Auction design and collateralisation

The current design of the auction does not require any collateralisation of risks from the auction participants. This is substantially different from the spot market where market participants are required to provide credit support in the form of bank guarantees. Trading electricity futures on the ASX also requires the placement of collateral along with other processes that eliminate counterparty risk. Bilateral swap contracts and other electricity derivatives are also either supported by collateralisation, or individual credit limits that are determined based on the counterparty's risk profile.

The auction process may occur as far as three years ahead, but payment for those units is only required directly before delivery. There is no requirement to provide any risk mitigation instrument between when the auction is held and when payment is required. This design element of the auction is a financially attractive feature that is unlikely to be mirrored in a bilateral contract or on an organised market, such as an exchange.

Despite the possible imperfections of the units as a hedging tool, the financial advantage stemming from the auction design described above may be one of the reasons why a liquid secondary market has not yet developed. This would be in line with the submissions Integral Energy and the Tasmanian Government's to the ACCC in 1997, fearing that centrally facilitated unit and auction process would stifle the development of market based solutions.

As a result of the auction design (i.e. lack of collateralisation and the auctioning of units up to three-years ahead), these units may be used for purposes other than as a non-firm hedge, in other words as a speculative investment. Although there is generally no issue with speculative investment instruments themselves, the ability of units to serve the purpose intended may be impacted where the purpose is more likely to be a speculative instrument than a hedging product.

Where the underlying instrument is not serving the purpose intended, a more liquid secondary market may improve the operation of the speculative market for the instrument but may hinder the development of a market (either primary or secondary) for a product which serves the underlying purpose of the units, that is, the hedging of inter-regional price risk.

The role of liquidity

Where secondary trading of units is provided through the AEMO auction process and therefore without the need for collateral, the liquidity of units may increase. Liquidity may then provide better opportunities for auction participants to manage their positions in the market. This is because as the delivery period approaches, participants may become aware of previously unknown market conditions, including interconnector upgrades and maintenance. The participant's portfolio size may also

change as retailers may have customers joining or leaving in an unpredictable fashion. In such cases, the underlying need for units changes, and therefore, the number of required units may also change. However, due to of the difficulties in forecasting unit value (given the non-firm hedge characteristics of units described in section 5.1.2), these changes in overall market conditions and a retailer's portfolio size may be less material, than the unpredictable issues impacting the interconnector itself.

Issue 2 Liquidity and auction design

9. **Does the current design of the settlements residue auctions inhibit the development of market based solutions, that is the lack of a requirement for collateral in the AEMO auction process versus the requirement for collateral or credit limits in bilateral and market based transactions?**

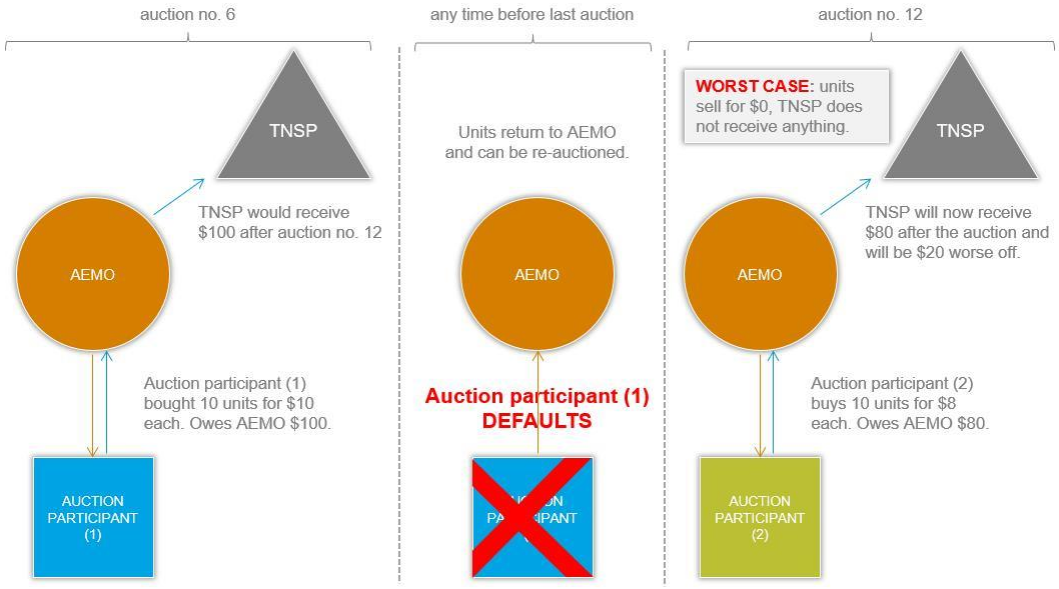
10. **Would the increased liquidity of units increase the efficiency of inter-regional hedging?**

5.1.4 Managing counterparty default risk

Current default procedure

As a result of the current auction design not requiring collateralisation of risks from auction participants, any risk of counterparty default is borne by TNSPs. Figure 5.5 illustrates the risk stemming from an auction participant default under the current auction rules.

Figure 5.5 Current default procedure



If a participant defaults, its units are cancelled by AEMO and are auctioned off at another auction. If the price at the new auction is lower than what the participant

would have paid if it did not default, then the amount the TNSP would receive from the auction proceeds would decrease. The effect of the zero dollar reserve price means that in the worst case scenario, the TNSP would not receive any auction proceeds from those units. If the units sold at the new auction for a higher price than originally paid by the party that defaulted, then the amount the TNSP receives from the auction would increase.

If the participant default occurs after the last auction, AEMO would cancel the units and pay the TNSP its respective share of the positive settlements residue which accrued to those units. No auction proceeds in relation to those units would be paid to the TNSP in this case.

As TNSPs are required to reduce their TUOS charges by the amount of the auction proceeds (or the payout from any non-auctioned units), the greater the value of these units, the more consumers benefit. However, current procedures already require TNSPs to be responsible for the risk of other parties' default that they may have no information, ability or incentive to manage. The risk of loss is, therefore, passed on to consumers, who may be required to pay higher TUOS charges if revenue from the auction proceeds is decreased due to a participant default.

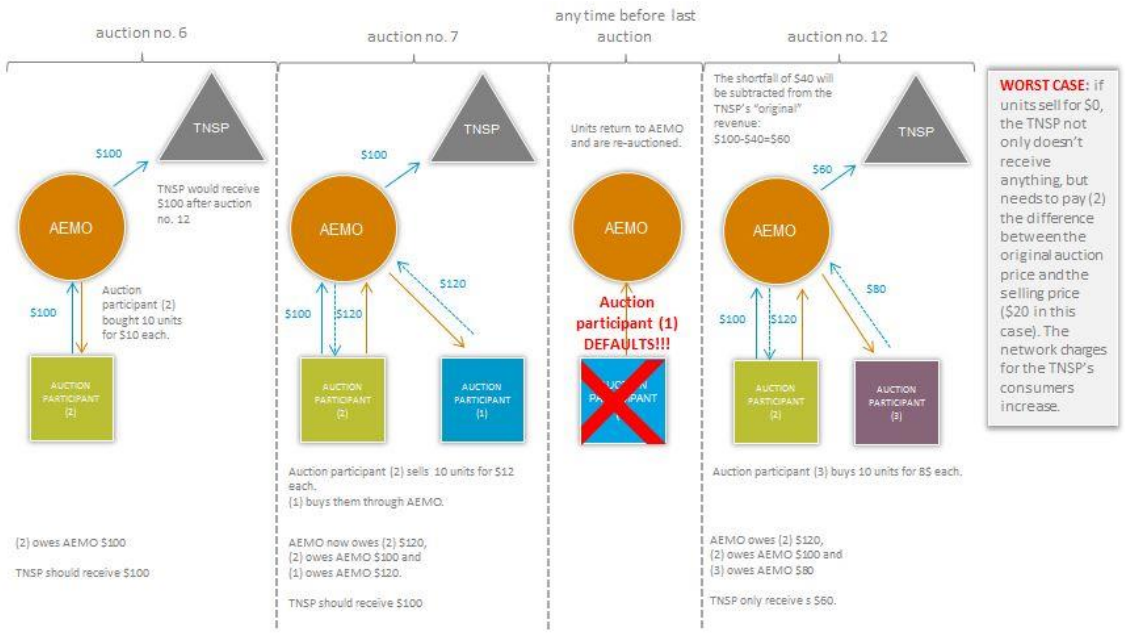
A TNSP undertakes various corporate risk mitigation techniques to manage the numerous risks it faces in running its business, including counterparty risk. A TNSP may determine, given a liquid secondary market under a model as set out by Westpac, that the risks it faces in relation to the trading of units requires additional corporate risk mitigation measures. Alternatively, even if the TNSP faces increased risk, a TNSP may determine it is not efficient to employ additional measures given the likelihood or materiality of those risks.

If the TNSP was to determine additional mitigation is required, it may seek to include the required additional expenditure as part of its operating expenditure allowance. Where any additional allowance is included in its revenue determination, the regulated revenue amount of the TNSP would be higher, all else being equal, than if the TNSP had determined no additional corporate risk mitigation measures were required. These costs will be recovered by the TNSP regardless of whether a unit holder defaults and will ultimately be passed onto the TNSP's customers.

Possible future default procedure

The possible secondary trading mechanism set out by Westpac does not alter the way in which default risk is managed, i.e. default risk would continue to be borne by TNSPs. However, depending on the procedures set out in the auction rules, the introduction of secondary trading may increase the risks TNSPs (and as a result, consumers) would need to be responsible for. One of the possible worst case scenarios is illustrated in Figure 5.6.

Figure 5.6 Possible future default procedure



Where a buyer of secondary units is not able to meet its financial obligations and its units are re-auctioned, there may be some cases, where the TNSP would be required to make a payment to AEMO. This payment would be similar to what is required now with respect to negative inter-regional settlements residue. Although such a case may be highly unlikely, if the secondary seller was able to secure a very high profit on the units it sold to the secondary buyer (i.e. bought low and sold high) and the revenue from the re-auction was less than that profit, the TNSP would have to make a payment to the secondary seller through AEMO. This means the TNSP would be required to make a payment, in contrast to the worst case scenario shown in Figure 5.5, where the TNSP is left neutral at $0.

There are several measures that may prevent increased counterparty risk for TNSPs and consumers, including the following options:

- The number of secondary units that can be offered for sale at a certain auction could be limited to the number of primary units at the same auction. This would guarantee that the TNSPs would never have to make a payment as the profit of the secondary seller could always be paid from the auctions proceeds from that auction.

- Some form of full[40] or partial collateralisation could be introduced. For market participants, this could be an increase to their current prudential requirements, and for non-market participant auction participants, a standalone collateral requirement could be introduced.

40 Including a solution where units would be treated as equities, i.e. the full purchase price would be payable up front.

- A default risk fund could be set up that would allow the recovery of any shortfall from previous payments to be funded by auction participants.

Default risk associated with secondary trading is currently managed by the auction participants. If a counterparty to a bilateral trade defaults, it does not have flow-on effect to a TNSP's customers, as auction proceeds distributed to TNSPs remain unaffected. If secondary trading was to be facilitated by AEMO, counterparty risk originating from secondary trading may be socialised among consumers as a result of the impacts on TNSPs.

On the other hand, a more liquid secondary market could provide means for an auction participant in financial distress to sell its units and, therefore, improve its financial situation.

It should be noted that the scope of the rule change request relates to secondary trading and as such, any collateral or other default risk measure introduced would apply only to secondary trading of units and not primary trading of units. As a result, the party that manages default risk and the costs associated with the management of that risk may be different in relation to primary units and secondary units.

Possible effects of collateralisation on competition

If auction participants were required to contribute to default risk mitigation it could increase the cost of units and could affect competition among retailers in particular. This is because for some participants, particularly for small retailers, it could become a barrier to entry due to the higher costs involved in securing the required collateral.

Retailers with a credit rating below investment grade would likely be required to place additional collaterals (on top of their spot market related obligations). Thus, their costs would increase, while it may not increase or would increase to a less extent for others. Increased costs may deter retailers from participating in the trading of units, which could increase their overall risk by exposing them to regional spot prices. This may, in turn, lead to higher risk of default for those retailers or an unwillingness to provide services in all regions.

Issue 3 Managing default risk

11. Do auction participants have better information, ability and incentives to manage the risk of default in comparison to TNSPs?

12. How would default risk be best managed in the auction process in relation to secondary units?

13. Is it appropriate to have different parties or mechanisms to manage the risk of default in relation to primary units and secondary units?

5.1.5 Value maximisation and costs of implementation

Costs of implementation

Secondary trading through AEMO facilitated auctions would require changes to the auction rules and AEMO's IT systems to support trading. Based on AEMO's estimation, the costs for implementation would be between $195,000 and $285,000. These costs may later be recovered through auction fees that are paid by auction participants. These costs would add to the total cost of units.

There may be further, indirect costs associated with the implementation of secondary trading.

Value maximisation

If secondary units are auctioned at the same auction as primary units are offered for sale, the supply of units at a particular auction could naturally increase. All things being equal, increased supply usually leads to lower prices. Lower unit prices could, on the one hand, reduce auction proceeds going to TNSPs, resulting in higher TUOS charges for consumers. On the other hand, if units are fit for purpose in terms of being efficient hedging tools, retailers may be able to decrease their retailer prices for consumers, as the wholesale purchase of electricity costs would be lower.

Consumers, however, do not directly benefit from lower unit prices and higher payouts received by traders, as their profits typically increase the value for their private shareholders. This may also be true for secondary trading, as all profits made by traders on the secondary market (by buying at lower prices and selling at higher prices) are not likely to flow through to consumers. However, there may be indirect benefits to consumers of a more liquid market.

In addition, if the increased liquidity of secondary trading improves the effectiveness of units as inter-regional hedging instruments, they may be valued more by auction participants, leading to higher prices and higher auction proceeds for the TNSPs. If this is the case, this could flow through to lower TUOS charges for consumers.

Issue 4 Value maximisation and costs of implementation

14. Would the introduction of secondary trading at AEMO facilitated auction increase the value of units to market participants and/or TNSPs?

15. Would the addition of secondary trading increase supply and therefore, lead to lower auction prices?

16. Are there any other costs that would need to be considered?

17. Are the benefits of secondary trading likely to outweigh the costs indicated by AEMO and any other indirect costs?

18. Should the facilitation of secondary trading be managed by an entity other than AEMO?

6 Lodging a submission

The Commission has published a notice under section 95of the NEL for this rule change proposal inviting written submission. Submissions are to be lodged online or by mail by 9 May 2017 in accordance with the following requirements.

Where practicable, submissions should be prepared in accordance with the Commission's Guidelines for making written submissions on rule change requests.[41] The Commission publishes all submissions on its website subject to a claim of confidentiality.

All enquiries on this project should be addressed to Istvan Szabo on (02) 8296 7813.

6.1 Lodging a submission electronically

Electronic submissions must be lodged online via the Commission's website, www.aemc.gov.au, using the "lodge a submission" function and selecting the project reference code ERC0220. The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

6.2 Lodging a submission by mail

The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated. The submission should be sent by mail to:

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

The envelope must be clearly marked with the project reference code ERC0220.

41 This guideline is available on the Commission's website www.aemc.gov.au

Abbreviations

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
ASX	Australian Stock Exchange
Commission	See AEMC
MNSP	Market Network Service Provider
NEC	National Electricity Code
NECA	National Electricity Code Administrator
NEL	National Electricity Law
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NEO	National Electricity Objective
NER	National Electricity Rules
NSP	Network Service Provider
SRD	Settlements Residue Distribution
SRC	Settlements Residue Committee
TNSP	Transmission Network Service Provider
TUOS Charge	Transmissions Use of System Charge