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21st July 2011

Our Reference: UE-SU-01

John Pierce
Chairman
Australian Energy Market Commission
P.O. Box A2449
Sydney South NSW 1235

BY EMAIL TO: aemc@aemc.gov.au

(And through the electronic lodgement facility)

Dear John,

Re: National Electricity Amendment (Network Support Payments and Avoided TUOS for Embedded Generators) Rule 2011

United Energy is pleased to present a submission to the AEMC consultation paper on a Rule change which is concerned with the interaction between avoided TUOS charges and network support payments for embedded generators. United Energy believes that the AEMC has not developed a strong case for the Rule change, and that the proposed new Rule lacks justification.

Should you or your staff have any queries in relation to this submission, please do not hesitate to contact Jeremy Rothfield, Regulatory Economist, on (03) 8846 9854.

Yours sincerely,

Andrew Schille
General Manager, Regulation

UNITED ENERGY
Distribution

National Electricity Amendment (Network Support Payments and Avoided TUOS for Embedded Generators) Rule 2011

Submission by United Energy

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Revision Log

Rev	Revision Status	Date	Prepared by:	Checked	Authorised
A	Preliminary	15/07/2011	Dr Jeremy Rothfield		
B	Final	21/07/2011	Dr Jeremy Rothfield		

TABLE OF CONTENTS

1. Overview of the arrangements for recovering TUOS and transmission connection charges in Victoria

The transmission arrangements in Victoria differ from those in other States with two separate parties, SP AusNet (formerly SPI PowerNet) and AEMO (formerly VENCorp), taking on distinct roles and responsibilities, as identified in legislation and in the National Electricity Rules (NER). SP AusNet owns and operates most of the transmission network in Victoria, while AEMO has responsibilities which include planning and oversight.

In January 2008, the AER concluded its transmission review for SP AusNet, and released a revenue determination in respect of prescribed transmission services and a determination specifying the pricing methodology for prescribed transmission services[1]. The AER approved a maximum allowed revenue (MAR) of $453.35 million, rising to $541.82 million by 2013-14[2].

Clause 6A.22.1 of the NER states that the *aggregate annual revenue requirement* (AARR) for *prescribed transmission services* is equal to the maximum allowed revenue. Clause 6A.23.2 notes further that the *AARR* should be apportioned in accordance with the following principles:

a) The *AARR* for a *Transmission Network Service Provider* must be allocated to each *category of prescribed transmission services* in accordance with the *attributable cost share* for each such category of services.

b) This allocation results in the *annual service revenue requirement* (*ASRR*) for that category of services.

c) The allocation of the *AARR* must be such that:

    1) Every portion of the *AARR* is allocated; and

    2) The same portion of the *AARR* is not allocated more than once.

d) Where, as a result of the application of the *attributable cost share*, a portion of the *AARR* would be attributable to more than one category of *prescribed transmission services*, that *attributable cost share* is to be adjusted and applied such that any costs of a *transmission system* asset that would otherwise be attributed to the provision of more than one category of *prescribed transmission services*, is allocated as follows:

    1) to the provision of *prescribed TUOS services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*;

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[1] Australian Energy Regulator, Final Decision: SP AusNet transmission determination, 2008-09 to 2013-14, January 2008; see page 10.

[2] Australian Energy Regulator, Final Decision: SP AusNet transmission determination, 2008-09 to 2013-14, January 2008; see page 19.

2) if any portion of the costs of a *transmission system* asset is not allocated to *prescribed TUOS services*, under subparagraph (1), that portion is to be allocated to *prescribed common transmission services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*;

3) if any portion of the costs of a *transmission system* asset is not attributed to *prescribed transmission services* under subparagraphs (1) and (2), that portion is to be attributed to *prescribed entry services* and *prescribed exit services*.

1.1 Allocation of the aggregate annual revenue requirement

The Revised Proposed Pricing Methodology, 2008-09 to 2013-14, prepared by SP AusNet, explains that the TNSP has calculated the attributable cost share for each category of prescribed transmission services[3]. Furthermore, particular categories of assets have been allocated to prescribed transmission service categories by applying the principles set out in clause 6A.23.2 of part J of the NER.

In general, the allocations appear to have been made as follows:

- All transmission **overhead power lines and underground cables** have been apportioned to *prescribed TUOS services*. The exceptions are two 66 kV double circuit lines which have been allocated to *prescribed exit services* because each one is radial, and each happens to connect a particular user to the transmission network.

- The main **system tie transformers** are allocated to prescribed TUOS services, whilst **connection transformers** are allotted to *prescribed entry services* and *prescribed exit services*.

- The assessment of **switchgear** is governed by a 'shallow' connection policy, meaning that switchgear is assigned to *prescribed entry services* and *prescribed exit services* only when those assets provide *supply* to *Network Users* connected at the connection point. The remaining switchgear is assigned to *prescribed TUOS services*.

- **Busbars and rack bars** are not separately identified, but are included in the relevant switchgear, transformer or reactive primary bays.

- **Reactive compensation plant** is assigned to *prescribed common transmission services* because it provides an equivalent benefit to all users. Reactive plant is assigned to *prescribed TUOS services* if the benefits of the reactive plant can be allocated on a locational basis, but cannot be allocated to a particular user or group of users. Reactive plant at the sub-transmission voltage level is assigned to prescribed exit services if it is clearly evident that the plant has been provided to meet the local reactive requirements of one or more users connected at the relevant substation.

[3] SP AusNet, Revised Proposed Pricing Methodology, 2008-09 to 2013-14. Prepared by SP AusNet, 12th October 2007.

- **Land and station establishment costs** are apportioned between prescribed exit services and prescribed TUOS services on a case-by-case basis applying the principles set out in clause 6A.23.2.

- All **communication assets** are assigned to *prescribed common transmission services*.

- **Secondary systems and equipment** are generally distributed in accordance with the allocation of the associated primary equipment.

- The operational costs of the **Victorian Network Switching Centre** are assigned to *prescribed common transmission services*.

- **System spares**, **non-system assets**, **easements**, and the **easement land tax** are allocated to *prescribed common transmission services*.

In Victoria, AEMO is responsible for apportioning the annual service revenue requirement (ASRR) for *prescribed TUOS services* and *prescribed common transmission services*.

1.2 The role of AEMO in setting charges for prescribed TUOS and prescribed common transmission services

The AER released a transmission determination for the Victorian Energy Networks Corporation (now part of AEMO) in April 2008[4]. As part of the determination, the AER calculated the maximum allowable aggregate revenue (MAAR) for VENCorp, which was worked out as being the sum of the following building block components:

- VENCorp operating expenditure; plus

- Committed augmentation charges, based on existing contracts; plus

- Planned augmentation charges, reflecting future contracts; plus

- Prescribed service charges payable to Murraylink and SP AusNet, which are subject to revenue caps; less

- Interest income; less

- Accumulated surplus (comprised of the over-recovery from the current period, if applicable).

The forecast of prescribed service charges payable to SP AusNet was calculated on the following key assumptions:

- 85% of the non-easement tax maximum allowed revenue (MAR) for SP AusNet was recovered through VENCorp; and

- 100% of the SP AusNet easement tax was recovered through VENCorp.

[4] Australian Energy Regulator, Final Decision, Victorian Energy Networks Corporation (VENCorp) transmission determination, 2008-09 to 2013-14, April 2008.

The forecast of prescribed service charges payable to Murraylink was determined after giving consideration to an agreement between VENCorp and Electranet, under which 55% of Murraylink's MAAR is recovered through VENCorp.

AEMO earns revenue, most of which is then re-distributed, by levying transmission use of system charges (TUOS) for electricity conveyed along the shared transmission network. The method of calculating these charges is presented in outline in a briefing note prepared by AEMO[5], and is also explained more fully in chapter 4 of the VENCorp transmission determination[6].

There are four components to the charges imposed by AEMO:

- TUOS locational price
- TUOS non-locational price
- Common service price
- Equalisation adjustments

1.2.1 TUOS locational and non-locational prices

The TUOS locational price is meant to represent the long run marginal cost of transmission at each connection point, and is assessed using summer maximum demand figures. The cost reflective network pricing method is applied.

The TUOS non-locational price is either an energy price or a capacity price, with each having a common value across all locations.

AEMO derives a total annual service revenue requirement (*ASRR*) for the Victorian region based on the summation of SP AusNet's *ASRR*s for the p*rescribed TUOS services* and p*rescribed common transmission services* categories and AEMO's own ASRRs for the respective categories[7].

The principles for the allocation of the annual service revenue requirement (*ASRR*) for Prescribed TUOS Services have been summarised by the AER into four steps, written as follows[8]:

- An initial amount is determined for the locational component of the *ASRR* for Prescribed TUOS Services. The estimate is obtained as either 50% of the *ASRR*, or some other proportion depending upon network utilisation.

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[5] AEMO, Electricity Transmission Use of System Prices, 1st July 2011 to 30th June 2012, prepared by Transmission Services, Australian Energy Market Operator, 15th May 2011.

[6] Australian Energy Regulator, Victorian Energy Networks Corporation, transmission determination, 2008-09 to 2013-14, April 2008; chapter 4, Pricing Methodology.

[7] Australian Energy Regulator, Victorian Energy Networks Corporation, transmission determination, 2008-09 to 2013-14, April 2008; paragraph 2.20, page 22.

[8] Australian Energy Regulator, Victorian Energy Networks Corporation, transmission determination, 2008-09 to 2013-14, April 2008; chapter 4, Pricing Methodology, section 3.3, page 29.

- The locational component of the *ASRR* is then adjusted by auction amounts.

- The adjusted locational component of the *ASRR* is then allocated to connection points with transmission customers on the basis of the estimated proportionate use of the relevant transmission system assets by each of those customers. The expectation is that a cost reflective network pricing (CRNP) method, or modified cost reflective network pricing method will be applied.

- The non-locational component forms the balance of the Victorian *ASRR* for prescribed TUOS services. The non-locational component of the *ASRR* is then amended to take account of:

    - Any remaining settlement residues.

    - The amount of any over- or under-recovery of the *AARR* in previous years.

    - The amount of any anticipated under-recovery in the relevant Financial Year by reason of application of the 2% cap on the annual change in prices for the recovery of the locational component of the *ASRR* in accordance with Rule 6A.23.4(f); and

    - The amount of any anticipated under-recovery in the relevant Financial Year by reason of prudent discounts applied in accordance with Rule 6A.26.1(d)-(g).

  A postage stamp approach is applied to non-locational TUOS prices. The price charged for the non-locational component of *prescribed TUOS services* is either an energy based price (in $/MWh) or a price based on contract agreed maximum demand (CAMD).

  The transmission charges which are imposed upon Victorian electricity distributors such as United Energy are apportioned to customers through tariff bands that correspond with the distribution tariff categories. The TUOS locational price is actually a fee, shown in the distribution tariff approval template as a "maximum demand charge", whilst the TUOS non-locational price is represented as a "general charge". The sum of the two components is approximately $27 million per annum, based on figures in the 2010 distribution tariff approval template for United Energy.

1.2.2 Common service price

The common service price is aimed at recouping the costs for the provision of *prescribed common transmission services*, including the costs of planning and operating the network. As in the case of the TUOS non-locational price, the common service price is either an energy price or a capacity price, with a common value across all locations.

Clause 6A.23.4 of the NER stipulates that pricing for *prescribed common transmission services* must be undertaken on a postage stamp basis. The Rule also states that prices for *prescribed common transmission services* must recover both the *ASRR* for prescribed common transmission services and the operating and maintenance expenditure incurred in the provision of those services.

There are two components to the common service price, a contract agreed maximum demand (CAMD) price and an energy-based price. The value of the common service charge passed through to customers by United Energy is approximately $35 million per annum.

1.2.3 Equalisation charge

The payments for prescribed TUOS and prescribed common transmission services made by electricity distributors are adjusted by an equalisation amount, which can be either positive or negative. For Citipower, Jemena and United Energy, the equalisation charge is an additional cost impost, whilst for Powercor and SP AusNet, the charge is negative, resulting in an overall reduction in the costs of prescribed transmission services. The equalisation charge is effectively a form of subsidy from the urban distributors to the regionally-based distributors, however, the value of the charge is being reduced over time, and, under the current Rules, will be written down to zero from late 2020 onwards[9].

The equalisation charge is shown as such in the United Energy distribution tariff approval template, which is filled out annually and submitted to the AER for approval.

1.3 The setting of charges for prescribed entry and exit services by SP AusNet

As has been discussed in section 1.2, AEMO sets the prices for *prescribed TUOS services* and *prescribed common transmission services*. However, the responsibility for pricing prescribed entry and exit services rests with SP AusNet, which allocates the remaining part of the SP AusNet *annual service revenue requirement* (*ASRR*) to transmission network connection points.

SP AusNet is guided by clause 6A.23.3 of the NER, the effect of which is that allocation is undertaken in proportion to the attributable connection point cost share. As noted in the SP AusNet Revised Proposed Pricing Methodology[10], the *ASRR* is allotted according to the ratio of:

- The costs of the transmission system assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively, at a transmission network connection point; to
- The total costs of all SP AusNet's *transmission system* assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively.

[9] Australian Energy Regulator, Victorian Energy Networks Corporation, transmission determination, 2008-09 to 2013-14, April 2008; chapter 4, Pricing Methodology, section 6, page 48. National Electricity Rules, clause 9.8.4.

[10] SP AusNet, Revised Proposed Pricing Methodology, 2008-09 to 2013-14. Prepared by SP AusNet, 12th October 2007; page 10.

When calculating the cost components mentioned above, SP AusNet values its assets using an optimised replacement cost approach. The roll forward method is also applied so as to ensure that asset valuations are current.

Distribution businesses such as United Energy, are typically only required to pay for prescribed entry services. In the United Energy distribution tariff approval template, prescribed service charges are shown as a single category, with a value equivalent to approximately $11 million per annum. The charges are invoiced directly by SPI Powernet and are passed through to customers. There is an additional category of fees from SPI Powernet described as supplemental charges, which amount to approximately $1.5 million per annum.

The Rules do not specify any principles to address the allocation of costs to multiple customers at a single terminal station. However, SP AusNet has devised its own allocation method which the business applies to existing customers. Customers are also at liberty to negotiate an alternative approach with SP AusNet.

1.3.1 Shared Entry Services

In circumstances in which more than one entry customer shares a terminal station, the aggregate costs are divided up in proportion to the usage of the different assets by different distributors or connection customers.

1.3.2 Shared Exit Services

In those cases in which more than one exit customer is supplied from a terminal station, the jointly incurred costs are apportioned between the customers by following the methods and procedures outlined below:

- Coincident maximum demand is measured as an average of demand on the ten highest demand days. Adjustments to the coincident maximum are made where a feeder is also shared between two or more customers, however an agreement has to be reached between the parties for changes to occur. The relevant parties are those with links to the particular connection point. The assessed value of peak demand is then applied to determine the allocation of costs between customers at shared exit terminal stations.

- The coincident maximum demand information that is used in the calculation is generally in respect of the previous financial year.

- If a new exit customer links into the network, then a reasonable forecast of that customer's anticipated demand should be derived, extending over a period of not less than six months. The demand projections will then underpin the fraction of the shared costs to be charged to that customer. The demand estimates will generally be factored into the terms of the connection agreement between SP AusNet and the new exit customer.

Typically, with shared terminal stations, the relevant electricity distributors will work out their individual maximum demand figures, and, after comparing figures, will decide on an appropriate apportionment of the costs to be paid to the transmission network service provider. SP AusNet will be provided with a percentage split for the jointly utilised terminal station. Non-distributor connection customers are subject to the same allocation principles and are presented with similar opportunities to engage in consultation.

1.3.3 Shared exit and entry services

In situations in which an exit customer shares a terminal station with a generator, or market network service provider (MNSP), the allocation of costs will be achieved on the basis of the comparative value of assets used by each party. The convention for asset valuation will again be optimised replacement cost.

1.4 Summary of the arrangements for transmission pricing in Victoria

In Victoria, transmission revenue is recovered through a number of different charging components. These components are quite distinct, with the result that *prescribed TUOS services* and *prescribed common transmission services* can be identified quite separately from *prescribed entry* and *exit services*. The fees for prescribed entry and exit services are labelled collectively as transmission connection charges. The costs for *prescribed TUOS services* should not be confused with the costs incurred in relation to prescribed entry and exit services. In addition, the pricing for *prescribed TUOS services* has both locational and non-locational components.

AEMO is responsible for setting charges to recover *prescribed TUOS services* and *prescribed common transmission services*. In contrast, SP AusNet levies charges for *prescribed entry* and *exit services* directly.

2. Avoided TUOS charges and network support payments in Victoria

2.1 Jurisdictional arrangements for payment of avoided TUOS

Clause 5.5(h) of the National Electricity Rules (NER) provides the basis for the proposition that connection applicants (which include embedded generators) should be paid TUOS fees in circumstances in which their generation activities result in the avoidance of payment for transmission services by DNSPs. Clause 5.5(i) of the NER describes the essential elements of a method for working out avoided TUOS, and these principles were endorsed by the ESCV, and also transformed into a set of workable procedures in October 2005. The ESCV referred to the calculation of avoided customer TUOS usage charges in its Guideline Number 15, on the connection of embedded generation[11]. The ESCV also released a guidance note on the calculation of avoided TUOS payments[12].

In the guidance note, the ESCV stated that the avoided cost payment should be the difference between the TUOS usage charges that would apply with and without the generator injecting energy into the network. The ESCV noted that actual TUOS usage charges were calculated by VENCORP and reported in the publication, *Electricity Transmission use of System Prices, 1 July 2005 to 30 June 2006*. The updated results of those assessments have been provided in more recent editions of the same document.

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[11] Electricity Industry Guideline No. 15. Connection of Embedded Generation, Issue 1. Essential Services Commission, Victoria, August 2004.

[12] Open Letter to Stakeholders and Interested Parties. Guidance on calculation of avoided TUOS payments. Essential Services Commission, Victoria, 19th October 2005.

As was noted in section 1.2.1, the TUOS Usage price is a location-specific price based on summer demand, with the price expected to capture the long run marginal cost of transmission at each connection point. The TUOS location-specific price is assessed using the cost reflective network pricing methodology. The prices are on a dollar per MW basis, and are applied to the average of the top ten summer peak demands at a point of supply, measured at half hourly intervals on weekdays from 1st November 2010 until 31st March 2011, between the times of 11.00am and 7.00pm. The period and the times over which maximum demand is measured have been prescribed by the AER in section 2.2 of its Pricing Methodology Guidelines for electricity transmission network service providers[13].

The average of the top ten summer maximum demands is calculated both inclusive and exclusive of the impact of embedded generator output. The avoided TUOS charge is worked out by multiplying the avoided demand by the usage rate or location-specific price applicable to the relevant terminal station.

The application of the aforementioned calculation method means that the avoided TUOS charges payable to embedded generators will be contingent on generation output on the ten occasions of peak summer demand. The Victorian distributors are not privy to the information which would enable them to forecast this level of output accurately. The distributors also do not have prior knowledge as to when the peak demand periods will eventuate. A further complication with developing predictions of avoided TUOS charges is that the DNSPs do not have adequate information as to future connections of new embedded generation. The DNSPs cannot foresee the number of new generator connections (and the output associated with each connection) over the five year term of a regulatory control period.

In addition to avoided TUOS payments, embedded generators may also be eligible for an avoided distribution use of system (DUOS) payment, and guideline number 15 sets out the circumstances under which such a payment should be made.

2.2 Shortcomings of the avoided TUOS payment structure

Payments for avoided TUOS only cover the locational component of *prescribed TUOS services*. This feature of the compensation regime is written into clause 5.5(h) of the NER, and is also encapsulated in the ESCV guidance note on the calculation of avoided TUOS payments. However, as was discussed in section 1.2, there is also a component of *prescribed TUOS services* which is non-location specific. The TUOS non-locational price has a common value across all locations and raises a significant proportion of the revenue that meets the costs of provision of *prescribed TUOS services*. The proportion of the Victorian annual service revenue requirement (*ASRR*) for *prescribed TUOS services* which is recovered through the non-locational TUOS price is potentially up to 50%. However, in United Energy's case, the split between the charges differs, with the non-locational price, or 'general charge', giving rise to approximately $7 million per annum of fees for *prescribed TUOS services* which are passed through to customers, whilst fees raised through the locational price, or 'maximum demand charge', amount to approximately $19 million per annum.

[13] Electricity transmission network service providers. Pricing methodology guidelines, Final, October 2007; section 2.2, page 6. Australian Energy Regulator, 29th October 2007

In addition, payments for avoided TUOS do not take the 'common service charge' or 'equalisation charge' into consideration. As noted in section 1.2.2, the common service price is a uniform fee (priced in $/MWh, if based on energy, or $/MW if structured around capacity) which raises revenue to meet the costs of provision of *prescribed common transmission services*. The equalisation charge is a mechanism which serves to lower, by a small margin, the costs to regional electricity consumers of *prescribed TUOS services* and *prescribed common transmission services*.

Consequently, the avoided TUOS charges paid to embedded generators only capture a small element of the overall transmission revenues raised by AEMO. Embedded generators do not qualify, automatically, for a payment in the form of the non-locational component of the TUOS price or the common service charge. There is therefore a presumption that the actions or operations of embedded generators do not ameliorate the demand for *prescribed common transmission services*, and may have only a moderate effect on the demand for *prescribed TUOS services*.

The assets which deliver services that might be categorised as *prescribed common transmission services* include communication facilities, easements, some reactive compensation plant, system spares, non-system assets, and the costs of the Victorian Network Switching Centre (see section 1.1). The requirement for these services is unlikely to be reduced as a result of the connection of an embedded generator, or series of embedded generators, to the distribution network. Since the marginal impact on the demand for these services is likely to be minimal, then there is at least an arguable case that embedded generators should not be reimbursed for the opportunity cost of the services. However, the core transmission assets, such as overhead power lines, underground cables, system tie transformers, and some switchgear, provide *prescribed TUOS services*. To the extent that there are network constraints as a result of the full utilisation of these assets, then embedded generators may help to alleviate the constraints at certain time intervals. The compensation made available to embedded generators is effectively only at marginal cost, rather than at average cost because avoided TUOS payments do not take the non-locational TUOS price into consideration.

For small embedded generators, reimbursement at marginal cost may be an adequate form of compensation because the operation of these generators will result in a marginal decline in the amount of electricity conveyed along the network. Avoided TUOS charges are also calculated by reference to maximum daily demands, and so generators will receive higher payments if they operate during peak periods. Furthermore, the use of the TUOS locational price in the formulation means that compensation levels will be higher if embedded generators locate close to terminal stations at which network constraints are in evidence on hot days during the summer months. For 2011-12, the TUOS location-specific price is $52,351 per MW at the Red Cliffs terminal station, but it is a mere $4,296 per MW at Mount Beauty. The price differentials provide a strong signal to investors seeking to establish embedded generation facilities.

For larger embedded generators, which operate for extended periods throughout the year, the avoided TUOS charge may not provide a reward which is commensurate with the network benefits that are made available.

3. AEMC consultation paper on network support payments and avoided TUOS for embedded generators

3.1 General comments

A network support payment is defined in the Rules as:

> *A payment by a Transmission Network Service Provider to:*
>
> *Any generator providing network support services in accordance with clause 5.6.2; or*
>
> *Any other person providing a network support service that is an alternative to network augmentation.*

In its discussion paper, the AEMC seems to have assumed that network support payments are only made by transmission network service providers (TNSPs). While this interpretation is consistent with the Rules, it also overlooks, or, at least does not explicitly address the reality that such payments are also made by distributors. In practice, electricity distributors are more likely to make network support payments because embedded generators will tend to connect to the distribution network, close to regions of high load. Furthermore, embedded generators, considered on their own, will generally not produce sufficient output to justify the deferral of an augmentation to the shared transmission network. Avoided TUOS charges provide a certain level of reward to embedded generators for the more limited network services that they may provide. The majority of the revenue earned by an embedded generator is likely to be derived from energy sales to retailers or directly to end-use customers.

As was noted in section 2.2, avoided TUOS charges provide a marginal cost signal to an embedded generator, however the amount earned by the generator may not be commensurate with the benefit that is actually provided. Embedded generators, considered individually, are seldom of sufficient size to serve as a substitute for augmentation of the shared transmission network, and/or an expansion in the capacity of transmission connection assets. In an environment in which peak demand is increasing steadily, spare capacity on the transmission system is generally taken up rapidly. However, if there were a large number of embedded generators, then their aggregate impact would potentially be more profound. A reasonable policy principle is that all embedded generators should qualify to receive avoided TUOS charges, irrespective of their individual capacity or the volume of generation output produced. Avoided TUOS charges do of course vary by region depending upon which terminal station happens to be in closest proximity. The location specific component of TUOS is set according to the particular terminal station.

If there were an agglomeration of embedded generators close to a particular load centre, then it is conceivable that their combined output would alleviate the load on the transmission network and thereby moderate the costs of augmentation in the short to medium term. Embedded generation can also contribute to reduced power flows on distribution networks, although this phenomenon is less common. Expansion and development projects on the distribution network can, nonetheless, be deferred in these circumstances. Embedded generators which produce electrical output consistently and reliably may be eligible to receive avoided DUOS payments, in addition to avoided TUOS and network support charges.

In cases where generation units (and not necessarily embedded generators) have been evaluated as a firm and dependable alternative to further development of the transmission system, network support payments have been offered as an inducement to encourage generators to operate at certain times of the day. The network support payments underpin the agreement between the owner of the generator (or generator proponent if the facility hasn't been built) and the TNSP or DNSP. The generator or generators will then be committed to operating under the agreed conditions so as to support the pre-existing network and to satisfy all of the electrical load.

Distribution network support agreements may provide for generator operation at times which do not coincide with periods of high spot market prices. The time intervals when distribution network support is called into service may also differ from periods of maximum demand at electricity terminal stations.

3.2 Rule requirements for network support payments

The Rules define a network support agreement in the following terms:

> *An agreement between a Network Service Provider and a Market Participant or any other person providing network support services to improve network capability by providing a non-network alternative to a network augmentation.*

Under the Rules in their current form, if a network service provider implements a generation option as an alternative to network augmentation, the cost of the network support is to be included in distribution service prices. Clause 5.6.2(m) provides:

> *Where the relevant Transmission Network Service Provider or Distribution Network Service Provider decides to implement a generation option as an alternative to network augmentation, the Network Service Provider must:*
>
> *1) register the generating unit with AEMO and specify that the generating unit may be periodically used to provide a network support function and will not be eligible to set spot prices when constrained on in accordance with clause 3.9.7; and*
>
> *2) include the cost of this network support service in the calculation of transmission service and distribution service prices determined in accordance with Chapter 6 or Chapter 6A, as the case may be.*

Transmission Network Service Providers (TNSPs) enter into these network support agreements more frequently than DNSPs and there are very specific pass through provisions in Chapter 6A to deal with the costs incurred under such agreements. For example, clause 6A.7.2(b) provides:

> *If a network support event occurs, a Transmission Network Service Provider must seek a determination by the AER to pass through to Transmission Network Users a network support pass through amount.*

The term "network support event" is defined in Chapter 10 as:

> *a) If, at the end of a regulatory year of a regulatory control period, the amount of network support payments made by a*

Transmission Network Service Provider for that previous regulatory year is higher or lower than the amount of network support payments (if any) that is provided for in the annual building block revenue requirement for the Transmission Network Service Provider for that regulatory year, this constitutes a network support event.

b) *In calculating the amount for the purposes of a network support event referred to in paragraph (a), the amount of network support payments made by a Transmission Network Service Provider must not include an amount of network support payments that are a substitute for a network augmentation where an allowance for capital expenditure in relation to that network augmentation has been provided for in the revenue determination.*

There isn't a similar pass through event in the Rule-specified pass through events for DNSPs. While it is not as common for DNSPs to enter into network support agreements, the likelihood increases for DNSPs that have the transmission connection planning role (as is the case in Victoria). Where network support agreements exist, the same principle applies to DNSPs as to TNSPs, and those charges should appropriately be passed through to end users. An efficient way to do this is to create the capacity for these charges to be incorporated in the annual pricing proposal process via provision for the specification of categories of "other charges".

Since the charges associated with network support agreements cannot be forecast readily as part of the distribution determination process (unless an agreement already exists, spanning a number of years), and as DNSPs have little control over these charges, in most cases, it is not appropriate to forecast the costs as part of operating expenditure and it is considered that these charges would be most appropriately represented in tariffs submitted as part of the annual pricing proposal process.

There are detailed provisions associated with network support in Chapter 6A, but these haven't been replicated in chapter 6, which deals with distribution. Consequently, the annual pricing proposal process is the most efficient mechanism for dealing with the costs incurred under network support agreements.

Network support agreements are also generally unique in that they are specifically designed for the circumstances faced. It should also be noted that these types of arrangements may have the potential to deliver significant benefits to end users. For example, the Bairnsdale network support arrangements that were approved by the Essential Services Commission of Victoria (ESCV) were an alternative to what would have been a very expensive transmission solution.

3.3 Network support agreement between SP AusNet and the owners of the Bairnsdale power station

In the late 1990s, SPI PowerNet, the operator of the main Victorian transmission business, examined options to upgrade the power supply to the regional town of Bairnsdale. Amongst the options under consideration were a new, 220kV transmission line from the town of Morwell, or a new distribution power line from another regional centre. However, ultimately no major new infrastructure was built and, instead, a network support agreement was negotiated with the owner of the Bairnsdale power station. The agreement pre-dates the National Electricity Rules.

The power station has two 40MW generator units. The network support payment was designed to cover only one of the two units. The first unit is contractually obliged to operate at night so as to ease the constraints on power entering the distribution network in the town and its vicinity. Peak demand outside of business hours occurs because of domestic hot water and agricultural enterprise loads. The second generation unit is run as peaking plant, and therefore participates in the wholesale electricity market. From an operational perspective, there may be a degree of interchange between the functions of the two units.

As a result of the network support agreement, the requirement to build new transmission infrastructure was obviated. Importantly, the need for a new terminal station was set aside. Consequently, a proportion of the network support payment should be regarded as the avoided costs of provision of *prescribed entry services* and *prescribed exit services*. The network support payments are passed through to customers. If the terminal station had been built, then customers would, instead, have become liable for the entry and exit service components of transmission connection charges. The costs passed on to consumers would have been higher.

If it had been built, the transmission line to Bairnsdale would have been a single radial line, with no shared network component associated with the transmission services that it provided. Similarly, the exit services at the terminal station would not have been shared.

3.4 Assessment of the proposed Rule to limit the payments of avoided TUOS to embedded generators

The proposed Rule that has been put forward by the AEMC would permit a distributor to withdraw from making avoided TUOS charges to embedded generators in circumstances in which the generator was already a beneficiary under a network support agreement.

[1] Clause 5.5 Access arrangements relating to Distribution Networks

Omit clause 5.5(h) and substitute:

> *Except where a Connection Applicant receives a network support payment, a Distribution Network Service Provider must pass through to a Connection Applicant the amount calculated in accordance with paragraph (i) for the locational component of prescribed TUOS services that would have been payable by the Distribution Network Service Provider to a Transmission Network Service Provider had the Connection Applicant not been connected to its distribution network ('avoided charges for the locational component of prescribed TUOS services').*

Network support payments may include one or more of the following components of the revenue for prescribed transmission services:

- The TUOS non-locational price or general charge, which is part of the fee for *prescribed TUOS services* (as explained in section 1.2.1)
- The common service charge for *prescribed common transmission services* (as explained in section 1.2.2).
- The equalisation charge (described in section 1.2.3).

- Charges for *prescribed entry services* and *prescribed exit services* (see section 1.3). In Victoria, these costs are billed directly to distributors by SP AusNet. Other transmission charges are paid to VENCorp (AEMO).

The network support payment actually measures the opportunity cost of the categories of prescribed transmission service described in the list mentioned above. This means that the network support payment records the cost of proxies or alternatives for the types of prescribed transmission service that have been discussed in this report. In effect therefore, the network support payment can be regarded as a form of shadow pricing.

A network support payment may include avoided TUOS charges at present, however there is little likelihood that this would occur because the Rules already make provision for "avoided charges for the locational component of prescribed TUOS services" (clause 5.5(h)). Provided that the parties to a network support agreement are reasonably well informed, then there is no reason as to why a network support payment should be comprised of the avoided locational component of prescribed TUOS services. The network support payment will be made up of the other types of charge that are used to recover the costs of transmission services. Avoided TUOS charges would be itemised separately. There would be no duplication of payments as has been suggested by the AEMC.

In many instances, United Energy believes that the network support payment made to an embedded generator may actually be confined to representing the shadow price of *prescribed exit services*.

In general, the parties to a network support agreement should be at liberty to negotiate the components of a network support payment. There is no requirement for any intervention by the AEMC. The proposed Rule change is not supported, and United Energy believes that it is unnecessary.

The proposed Rule is also potentially harmful because it would result in a loss of transparency in respect of new network support agreements. The avoided TUOS charge would now need to be built into the network support payment, and such an arrangement is less desirable than leaving avoided TUOS to feature as a stand-alone component.

Consumers may be disadvantaged if embedded generators are unable to access avoided TUOS charges externally. This is because embedded generators will expect and will seek out a proportionate increase in the value of the network support payment as a result of having renounced the avoided TUOS revenue stream. There may be scope for the owners and operators of embedded generators to over-state the expected output from their facilities so as to claim a higher value of payments. If TNSPs and DNSPs are in a position to pass these costs onto end-users, then consumers will suffer a welfare loss.

3.5 Answers to specific questions

Question 1 Are the current arrangements efficient?

1. Would the combination of a network support payment and an avoided TUOS payment over-signal and/or over-compensate embedded generation?

2. Do the services and benefits provided by embedded generators for a network support payment and an avoided TUOS payment differ, and, if so, by how much?

3. Is the Rule change likely to have any unintended consequences in terms of the network support agreement negotiations?

The combination of a network support payment and a separately-itemised avoided TUOS payment is unlikely to result in any over-signalling, and over-compensation of embedded generation. Under existing regulatory arrangements, avoided TUOS charges can be more readily scrutinised.

If the proposed Rule were to be implemented, then the generator proponent would have more latitude to over-predict its output. The underlying presumption is that the network support payment would be structured in such a way as to incorporate forecasts of maximum demand over ten peak days during the summer months. The forecasts are used to calculate an avoided TUOS payment.

The services and benefits provided by embedded generators are likely to differ somewhat when the method of remuneration is a network support payment as opposed to an avoided TUOS fee. Avoided TUoS payments only apply to the transmission network whereas network support payments could apply to the distribution network. Consider an embedded generator (such as that at Bairnsdale) which provides network support on the distribution network at night for hot water heating. The network support payment is made for operation at night but provides no incentive at times of peak demand on the transmission network, which typically occur during the afternoon on hot days due to air-conditioning load. Such a generator should also receive avoided TUoS payments so that the operator is encouraged to function in daylight hours during the relevant season. These two payments would be completely independent.

Of course the main motive for daytime operation of the generator would be the possibility of earning revenue from high-priced energy sales to retailers.

The Rule change may have unintended consequences, as was noted and discussed in section 3.4.

Question 2 What is the materiality of the identified problem?

1. To what extent do embedded generators receive both a network support payment and an avoided TUoS payment? Please provide any instances where a network support payment is made to an embedded generator and an indication of the expected value?

2. How material is receiving both a network support payment and an avoided TUoS payment to the commercial viability of an embedded generator? (Please provide evidence)?

3. Should specific provisions related to a transitional period be considered?

At present, there are no embedded generators on the United Energy distribution network which receive both a network support payment and a reward for avoided TUOS services. However, arrangements with both types of payment could become more commonplace in future.

The network support payment is likely to be larger than the avoided TUOS charge. The combination of both types of payment, in conjunction with the projections of energy sales to retailers, may be required to make embedded generation viable.

United Energy strongly believes that there should be no Rule change, because the proposed change has no merit. The AEMC has not explained how the combination of an avoided TUOS charge and a network support payment would constitute a doubling up of the reimbursement or reward available to an embedded generator. The AEMC has simply relied upon statements taken from the AEMC report of the review into demand side participation (DSP2)[14]. Those statements demonstrate that the AEMC did not make an effort to analyse the components of transmission revenue, and to then align the components with the services provided by particular assets. If an attempt is made to gain a fuller understanding of the possible constituents of a network support payment, then it becomes apparent that there is little likelihood of duplication of the payments to embedded generators, particularly if both parties to a transaction are well-informed. In addition, the AEMC did not provide any empirical evidence in support of its position. Accordingly, the analysis undertaken by the AEMC is superficial, and is incapable of supporting the recommendation for a Rule change.

However, if the Rule change does go ahead, then safeguards should be made available for embedded generators and network service providers which have clinched agreements under the existing Rules, or under a previous regulatory regime.

[14] AEMC (2009). Final Report, Review of Demand-Side Participation in the National Electricity Market, Australian Energy Market Commission, 27th November 2009.