

# Pricing Methodology

Stakeholder Consultation



# Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
Your feedback is important .....	2
Email .....	2
Website .....	2
Post .....	2
<b>Transmission Pricing .....</b>	<b>3</b>
Regulatory Timeline .....	4
Pricing Review Approach .....	4
<b>Regulatory Requirements .....</b>	<b>5</b>
<b>Confirmation of Stakeholder Objectives .....</b>	<b>6</b>
<b>Current Period Pricing Methodology .....</b>	<b>8</b>
<b>2018/19 – 2022/23 Pricing Methodology .....</b>	<b>8</b>
Proposed to Retain .....	8
Potential Adjustments .....	9
<b>Industry Direction .....</b>	<b>12</b>
Policy Discussions .....	12
Industry Trends .....	12
Cost Reflective Network Prices .....	13
Approved Pricing Structures .....	15
Recent revisions to the Pricing Rules .....	16
<b>Pricing methodology development and next steps .....</b>	<b>17</b>

## List of Tables

- Table 1: Key Definitions
- Table 2: Transmission Pricing Structure
- Table 3: Pricing Methodology Objectives
- Table 4: TNSP Pricing Structures
- Table 5: Pricing methodology development and next steps

## List of Figures

- Figure 1: Pricing Review Approach
- Figure 2: Visual representation of pricing structure
- Figure 3: Comparison of AEMO’s Connection Point and Regional Demand Forecasts with actual usage
- Figure 4: Cost Reflective Network Pricing

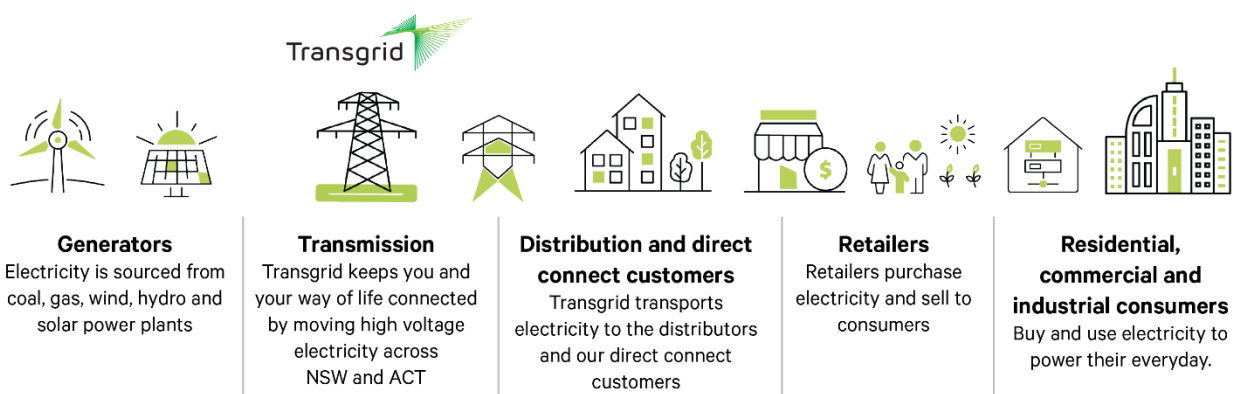
## Executive Summary

As operator and manager of the NSW high voltage electricity grid, Transgrid keeps you and your way of life connected – 24/7. We connect generators, distributors and major end users across the state, enabling you to access electricity where and when you need it.

With transmission services accounting for around 7% of the average residential electricity bill, we recognise that the way we manage our business, and the approach we take to operating and maintaining the grid, has a direct impact on you every day. We take this responsibility seriously. As a provider of an essential service, we believe that you should not pay more than necessary for your electricity and that you can rely upon us to provide that service.

With this in mind, we are committed to delivering the most efficient solution to meet your energy needs, both now and into the future.

### Our role in connecting you to your energy



As the Coordinating Transmission Network Service Provider for NSW and the ACT, Transgrid is responsible for calculating transmission prices for all NSW transmission businesses using the approved Pricing Methodology set by the Australian Energy Regulator (AER).

To assist customers and other stakeholders in forming their views, Transgrid has developed this consultation paper that explains our proposed approach to the Pricing Methodology for the next regulatory period 2018/19 – 2022/23. Transgrid would like to understand your thoughts on how we set prices for transmission services in NSW and the ACT and invites you to comment.

This paper sets out:

- The timeline for conducting this review and our approach to reviewing our current Pricing Methodology;
- An overview of our current approach and how it aligns with regulatory obligations, customer and business objectives;
- The opportunities we have identified for change, the aspects we wish to retain and why;
- Potential developments in pricing for Transmission Services and testing whether the current arrangements are resilient to electricity industry change.

Transgrid is committed to ensuring that our services meet the long term needs of our customers. In developing the next period's Pricing Methodology, Transgrid has continued to draw on experience gained over the past ten years under the current Rules.

Whilst in large part not attributable to Transgrid, recent increases in electricity prices are a concern for everyone. However the level of prices is a separate matter to the Pricing Methodology for transmission services. The Pricing Methodology is used to determine how transmission network businesses revenue allowance, determined by the AER, is allocated between customers. This consultation paper is only concerned with the transmission Pricing Methodology.

Transgrid is in the process of preparing its revenue proposal and the outcome of this process will affect customers' price levels. Transgrid will be consulting with consumers on that process separately.

To assist customers and stakeholders in formulating their feedback, we have included a number of questions that we are seeking input on. In particular, Transgrid welcomes feedback from customers regarding their experience of the outcomes delivered under the current arrangements and is keen to receive suggestions as to how the existing pricing arrangements might be improved to address issues of concern.

Transgrid also recognises that it is not practical or feasible to develop a new Pricing Methodology without first understanding its impact for individual customers. We will therefore undertake significant internal work, and carefully consider feedback received, in developing the next Pricing Methodology. Throughout this process we will keep customers and stakeholders involved.

## Your feedback is important

Transgrid seeks feedback on the questions raised in this Pricing Methodology consultation paper by close of business, Friday 14 October 2016. Join the energy conversation and provide your comments in the following ways:

### Email

[pricing.consultation@Transgrid.com.au](mailto:pricing.consultation@Transgrid.com.au)

### Website

[www.Transgrid.com.au/pricing-consultation](http://www.Transgrid.com.au/pricing-consultation)

### Post

Nicola Tully  
Group Manager, Prescribed Revenue & Pricing  
PO Box A1000, Sydney South, NSW 1235

Stakeholders also have further opportunities to provide input to Transgrid's Pricing Methodology and other matters as part of the standard AER formal transmission determination process.

## Transmission Pricing

The Transmission Pricing Methodology is used to allocate revenue to be recovered between different customers. The Pricing Methodology is part of the revenue submission and must be approved by the AER and must be compliant with the National Electricity Law, National Electricity Rules (NER), and the AER's Pricing Methodology Guideline. The methodology only applies to the pricing of prescribed transmission services; hence, negotiated and non-regulated transmission services are not within scope of this consultation.

As a network service provider, we are committed to ensuring efficient network charges are passed through to customers and energy consumers while also taking into account an equitable spread of costs. However, as a Transmission Network Service Provider (TNSP) we do not have influence over the Distribution Network Service Provider (DNSP) or the unregulated Retailer pass through of our charges to consumers.

The approved Pricing Methodology also applies to Directlink, Ausgrid and ActewAGL's transmission service customers. Transgrid's approach to the Modified Load Export Charge prices impacts customers of both Powerlink in Queensland and AEMO-Victoria.

The current rules governing transmission pricing are set out in Chapter 6A of the National Electricity Rules (Rules). They came into force in December 2006, following an extensive review by the Australian Energy Market Commission (AEMC). The last major revision occurred on 28 February 2013, which introduced the Modified load Export Charge. In setting the current transmission pricing rules, the AEMC limited the degree of discretion afforded to TNSPs in setting prices. The current Rules therefore ensure that TNSPs adopt broadly consistent approaches to transmission pricing.

The scope of possible future developments in Transgrid's Pricing Methodology is constrained by the requirement to comply with the Rules. Therefore, improvements that do not require amendments to the Rules may be implemented through our next period Pricing Methodology. If improvements to pricing arrangements require amendments to be made to the Rules these will be in the medium term, Transgrid will promote such amendments, provided they are likely to accord with the National Electricity Objective<sup>1</sup> (NEO), which 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.

Table 1: Key Definitions

Term	Definition
<b>National Electricity Rules (Rules)</b>	Rules exist so that market participants understand their rights and responsibilities, and there is appropriate regulation so that consumers do not pay more than necessary for their electricity. The Rules are made under the National Electricity Law and have the force of law.
<b>TUOS (Transmission Use of System)</b>	Prescribed services that provide benefits to customers or other TNSPs (transmission network service providers).
<b>AARR (Annual Aggregate Revenue Requirement)</b>	The maximum allowable revenue per year determined by the Australian Energy Regulatory (AER) adjusted by the X-factor, CPI and performance incentive schemes as defined in the Rules.

<sup>1</sup> National Electricity (NSW) Law – Sect 7

Term	Definition
<b>Standard CRNP (Cost Reflective Network Pricing)</b>	A method for calculating locational transmission prices under the Rules, based on historical peak usage to allocate existing investment costs.
<b>Modified CRNP</b>	A method for calculating locational transmission prices under the Rules, based on usage and capacity. Increases the locational price as the utilisation of the transmission elements increases.
<b>LRMC (Long Run Marginal Cost)</b>	A forward-looking method for allocating network costs, where charges are based on the cost of future investments, not currently allowable for TNSPs under the Rules.
<b>Modified Load Export Charge (MLEC)</b>	New transmission charging arrangement to better reflect the benefits transmission provides in supporting energy flows between regions.
<b>X-factor</b>	A revenue smoothing factor set by the AER to minimise price shocks.

## Regulatory Timeline

Transgrid must submit a new Pricing Methodology for review and approval by the AER as part of the next revenue submission due 31 January 2017. The approved Pricing Methodology will then apply for the next revenue control period, 2018/19 – 2022/23. Prices are set annually and published on 15 March with MLEC now to be published on 15 February each year.

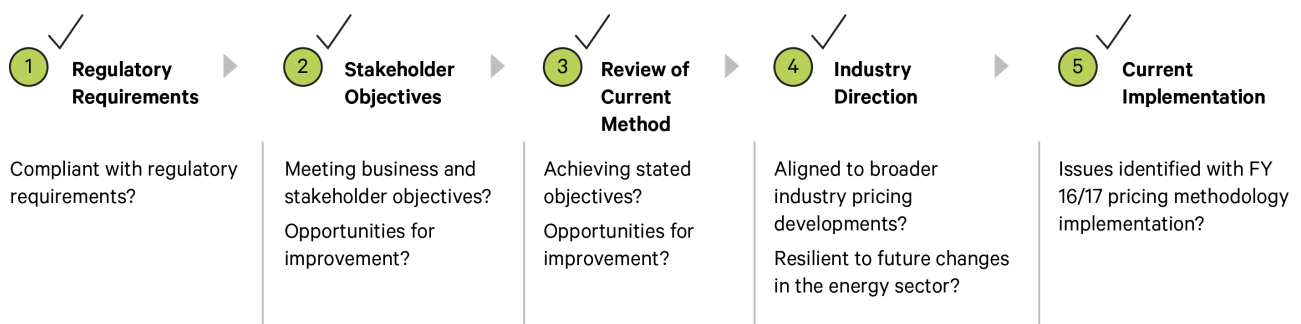
A copy of the current period Pricing Methodology is available on the Transgrid website:

[www.Transgrid.com.au/what-we-do/our-network/our-pricing](http://www.Transgrid.com.au/what-we-do/our-network/our-pricing)

## Pricing Review Approach

To develop the options for the next period Pricing Methodology Transgrid conducted a five-stage review process as shown below in Figure 1.

Figure 1: Pricing Review Approach



## Regulatory Requirements

Transmission Prices are set in accordance with the NER and the AER approved Pricing Methodology to recover the costs of providing prescribed transmission services. The components of Transgrid's current transmission pricing structure are shown below in Table 2 and Figure 2, there is limited flexibility in these components under the Rules. The allocation of the Aggregate Annual Revenue Requirement (AARR) is required to be based on the optimised replacement cost at the prescribed asset base as per the Rules<sup>2</sup>.

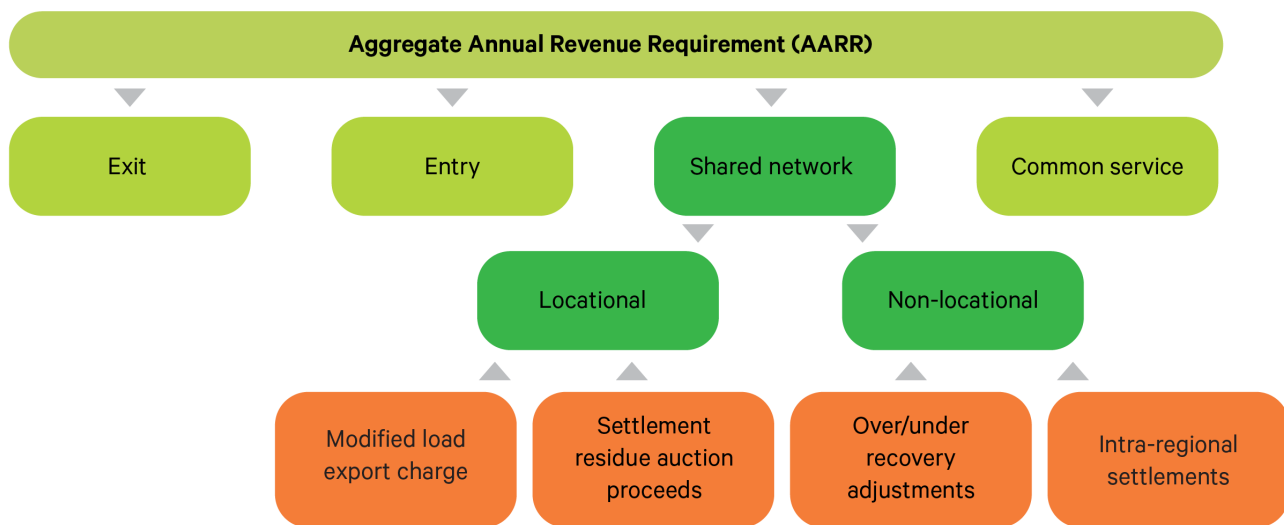
The Pricing Structure is designed to provide a balance between pricing stability and pricing signals for efficient use of transmission services. Transgrid recognises the importance of providing information to customers in relation to the derivation of transmission prices, and to provide customers with the means to better manage their transmission costs, within the constraints of the Pricing Structure provided by the Rules.

Table 2: Transmission Pricing Structure

Transmission Service Charge	Description of Charge	Connection Point Specific	Single Standard Rate	Transmission Rates 2016/17
<b>Entry</b>	Specific connection costs for each generator reflecting the assets used to support the connection.	<input checked="" type="checkbox"/>		\$/day
<b>Exit</b>	Specific connection costs for each customer reflecting the assets used to support the connection.	<input checked="" type="checkbox"/>		\$/day
<b>Locational</b>	Charge based on customer's use of the network (both locally and more broadly) provides the price signals based on monthly maximum demand.	<input checked="" type="checkbox"/>		\$/kW based on customer's forecast average monthly maximum demand
<b>Common Service</b>	Covers cost of services that benefit all customers, specific types of assets that are not dedicated to a single connection point, e.g. reactive plant.		<input checked="" type="checkbox"/>	\$/kW based on customer's historical annual maximum demand at each connection point
<b>Non-locational</b>	Recovers remaining revenue required.		<input checked="" type="checkbox"/>	\$/kW based on customer's historical annual maximum demand at each connection point

<sup>2</sup> NER, Clause 6A.22.3 and 6A.22.4

Figure 2: Visual representation of pricing structure



In Figure 2 above, the green boxes indicate the share of AARR allocated by service and the orange boxes are revenue adjustments applied to the AARR.

In order to ensure Transgrid’s compliance with the approved Pricing Methodology, the pricing principles for prescribed transmission services, and part J of Chapter 6A of the Rules, we maintain Rule obligations in our compliance management system. We also maintain records of the annual calculation of prescribed transmission service prices as well as periodically engaging suitably qualified persons to undertake a functional audit of transmission pricing models and processes.

### Question 1

How comfortable are you with the current pricing structure?

Is it easy to understand?

Do you support the existing approach to setting transmission prices? If not, what other arrangements would you recommend that would better promote the National Electricity Objective?

## Confirmation of Stakeholder Objectives

Transgrid has identified customer objectives as efficient costs, price stability, price signals, responsiveness and equity. Transgrid’s understanding of the alignment of these with Transgrid’s objectives, regulatory requirements and the current methodology are summarised below in Table 3.

Our use of the term “responsiveness” means that customers understand how prices are set and are able to respond to price signals. Transgrid considers this to be a key customer objective and is an area for improvement.

Minimisation of price and revenue volatility are objectives for customers and TNSPs which are closely aligned. Some customers have raised the potential of network price signalling to encourage environmental sustainability and stability of supply in addition to the existing efficient network use outcome, we seek feedback from a wider audience on whether these are commonly held objectives that Transgrid should be investigating.



Table 3: Pricing Methodology Objectives

Objective	Description	Transgrid	Customers	Regulatory Requirements	Current Methodology
<b>Efficiency</b>	Prices reflect the efficient costs of providing network service		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Cost Recovery</b>	TNSPs are able to recover at least efficient costs of providing network services	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>ALIGNMENT</b>	<b>Reduced Revenue Volatility</b>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	<b>Price Stability</b>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
<b>Price Signals</b>	Provide price signals to customers to encourage efficient use of the network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
<b>Responsiveness</b>	Customers understand how prices are set and are able to respond to price signals		<input checked="" type="checkbox"/>		Improvement opportunities
<b>Equity</b>	Prices reflect customers use of the system and allocates costs equitably between customers		<input checked="" type="checkbox"/>		Improvement opportunities

### Question 2

Do you agree with the transmission pricing objectives set out in this section? Are there any other objectives for transmission pricing that we have not identified?

## Current Period Pricing Methodology

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Transgrid consulted closely with customers, large energy users and consumer representatives prior to the submission at the end of May 2014 of the Current Period Proposed Pricing Methodology, further details are also available on our website [www.Transgrid.com.au/what-we-do/our-network/our-pricing](http://www.Transgrid.com.au/what-we-do/our-network/our-pricing)

Three key points were consistently provided by customers during the consultation:

- For transmission pricing to be more cost reflective
- To reduce the common service and non-locational proportion of transmission charges
- For charges to be based on demand rather than energy

Transgrid's Pricing Methodology responded to these customer priorities by introducing Modified Cost Reflective Network Pricing (MCRNP) which reduces the revenue being collected from common service and non-locational charges and instead prioritises locational pricing. This improves price signals and customers' ability to respond to price signals. Adopting MCRNP also improves the cost reflectivity of pricing as it is based on network utilisation, providing relevant price signals for more or less congested parts of the network.

Transgrid also changed the basis of pricing, shifting from energy to maximum demand. Customers supported this change as they recognised our investment decisions are based on maximum demand, rather than energy, so by aligning our price signal to our investment driver we could better signal and encourage efficient use of the network.

Our new Pricing Methodology achieved the primary customer priorities and was approved by the AER in April 2015. This approval allowed us to implement the new Pricing Methodology for 2016/17 prices. The implemented changes to the Pricing Methodology for the current period were strongly supported by customers:

1. Move to Modified Cost Reflective Network Pricing from standard CRNP
2. Move to maximum demand from energy for non-locational and common services pricing

## 2018/19 – 2022/23 Pricing Methodology

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Having completed our initial review against the objectives set out in Table 3 above and with consideration of regulatory requirements and emerging electricity industry trends Transgrid considers the current Pricing Methodology is resilient to future changes to the sector and is meeting the identified objectives satisfactorily.

The following are proposed for consideration by stakeholders for the next period Pricing Methodology. Given the significant consultation undertaken for the current Pricing Methodology and subsequent implementation there are only limited changes proposed, some of these changes would require Rule changes so would only be able to be implemented in the medium term.

### Proposed to Retain

Specifically, the following features of the current methodology have been assessed and Transgrid considers these features should be retained in the next period Pricing Methodology as we believe they continue to be aligned with stakeholder objectives. We seek your feedback on retaining these features:

- **Non-locational and Common Service Price:** Continue to use historical annual maximum demand as the basis of calculating the non-locational and common service prices which provides price signals to customers that are closely aligned to Transgrid's investment drivers.

- **Locational Charge: Maximum Demand Based Prices:** Continue to use forecast monthly maximum demand as the basis of calculating the locational prices and actual monthly maximum demand for charging which provides price signals to customers.
- **Locational Charge: Equitable Determination of Network Utilisation:** Continue to allocate system costs using cost reflective network pricing on a 365 day basis, as this results in a more equitable outcome for customers than 10 day peak.
- **Modified Cost Reflective Network Pricing:** Continue to calculate the locational price using Modified Cost Reflective Network Pricing (MCRNP) using utilisation adjusted replacement costs to adjust the amounts recovered from locational and non-locational charges, and to provide utilisation adjusted cost reflective price signals.
- **Existing price structure:** Continue to use the current price structure and components for the 2018/19-2022/23 Pricing Methodology with continued use of the industry standard T-PRICE software.

### Question 3

Do you agree that the features discussed above should be retained in the next period Pricing Methodology?

Are they aligned to your objectives?

## Potential Adjustments

Potential adjustments for future periods relate to accuracy of pricing and potential rule changes to support responsiveness and equity. Only one adjustment could be proposed for the next period Pricing Methodology as the others are medium term objectives as they would require Rule changes. We seek your feedback on these potential adjustments for both the short and medium term:

### Adopt AEMO Connection Point Forecasts

Transgrid believes that taking advantage of the improvements in data by changing to the AEMO connection points demand forecast as compared to the AEMO state level forecast as is currently used, may improve accuracy in locational prices and should be further investigated. We believe it will likely result in benefits for customers related to economic efficiency, improved price signals and equity.

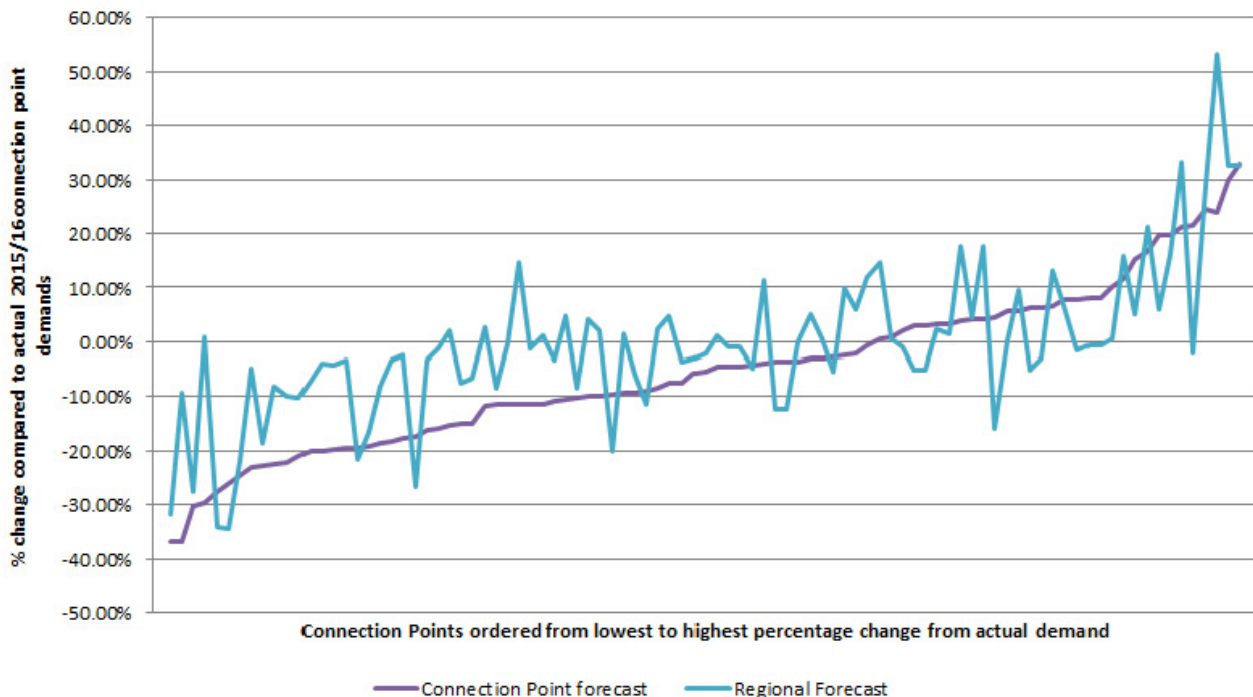
The current approach assumes that the maximum demand at each connection point has an equal load growth. The current approach can be improved and made more locational specific by using the AEMO connection point demand forecasts at each connection point. The connection point demand forecasts are also published annually by AEMO and have improved in accuracy. That is, the system demand growth forecasts (top down approach) are now better reconciled to the connection point demand growth forecasts (bottom up approach).

An initial analysis was undertaken using connection point demand forecasts in the NSW and ACT market region for the 2015/16 financial year. This year was selected as actual connection point demands are known and the impact of a change in the demand forecast approach can be assessed against actual demands. For the 2015/16 financial year, the NER required Transgrid to use the 2013/14 historical demand data at all TNSP connection points (except for new connection points).

The summer and winter 50% POE connection point forecasts provided by AEMO were used in this study. Figure 3 compares AEMO's Connection Point Forecast with AEMO's NSW Regional Demand Forecast, in terms of accuracy to actual 2015/16 usage data. The figure shows there is a clear difference at each connection point with an equal overall forecast error of 2%. Transgrid will conduct further analysis to

determine if adopting the connection point forecast should be expected to achieve improved accuracy in price setting by connection point and consider whether it potentially introduces a greater risk of annual price volatility without a material improvement in overall accuracy.

Figure 3: Comparison of AEMO’s Connection Point and Regional Demand Forecasts with actual usage



### Amendment to the 2% Rule Constraint

Based on observations from the implementation of the current period Transgrid believes that **investigation of a rule change to allow TNSP’s to request an exemption to the 2% rule**<sup>3</sup>, not just customers should be undertaken as it will likely increase equity and responsiveness. This concern has also been raised by others, notably the EUAA in its recent submission on Powerlink’s Pricing Methodology “no matter what changes are made in pricing methodology the requirement that prices change by no more than  $\pm 2\%$  per year nominal means that it will be a long time before there is true economically efficient cost reflective network pricing<sup>4</sup>”

To illustrate the concern, in late 2014/15 there were two new direct connect customers, Customer A & Customer B. As normal practice, these two customers were requested to provide future energy and demand profile information as part of the data requirements in the price setting process. Due diligence of the supplied information was undertaken, however, throughout their operation in the 2015/16 financial year, it became evident that the demand forecasts did not match the actual metered electricity demand. The actual demand profiles were materially different.

Customer A had under-estimated their forecast demand and as a result had a locational price set in 2015/16 that led to the annual locational charge being 30% higher than it should have been. Due to the 2% Rule this higher price would have been constrained high for the 2016/17 financial year. In preparation for the 2016/17 transmission prices, Transgrid assisted Customer A to seek AER approval for an exception to the 2% Rule.

<sup>3</sup> NER Clause 6A.23.4(b)(2)

<sup>4</sup> EUAA, Submission to Powerlink Transmission Pricing Consultation Paper, 16 October 2015

Conversely, Customer B had over-estimated their demand forecast in 2014/15 and 2015/16 and had had a low locational price set. Due to the 2% Rule, the locational price was kept low for the 2016/17 financial year as well. This will result in Customer B paying less for the locational charge than should have been the case. The Rules, currently do not allow a TNSP to request AER approval for the locational price to be exempt from the 2% Rule without a customer first requesting a renegotiation of the connection agreement. Further investigation and analysis of the implications of this potential change, including whether a transition would be required will be necessary if this potential adjustment is pursued.

### Most Recent Available Data

Based on feedback from large customers, Transgrid believes that **a rule change to allow use of most recent annual data** should be investigated as it will likely result in benefits for customers relating to responsiveness and equity.

The Rules and the Rule definitions require transmission prices to be calculated using metered energy or demand data from the last full financial year. Where metered data is not available for new connection points, then actual data is to be used consistent with the approach described in the approved Pricing Methodology. With this requirement, the price setting timetable requires historical data that is two years old to be used in the calculations. For example, when preparing prices for the 2017/18 financial year, the Rules require inter-regional TUOS charges to be published in February 2017 and transmission prices to be published in March 2017. This means that the last full financial year of historical data is sourced from the 2015/16 financial year, which is two years old by the time prices are applied for billing purposes.

Some directly connected customers have requested that Transgrid consider a Rule change to enable the transmission prices and inter-regional charges to be calculated using data from the most recent full 12 months of historical data. For example, using this approach in calculating 2017/18 transmission prices, the historical data would be sourced from 1 January 2016 to 31 December 2016. This would allow enough time to prepare the historical data for the price setting process and would also advance the historical data used by 6 months, making it more reflective of current demand movements. There is already a precedent, with AEMO-Victoria setting transmission prices in the Victorian region using data sourced from 1 April to 31 March. This has been approved as a NER Chapter 11 derogation. Further investigation and analysis of the implications of this potential change, including whether a transition would be required will be necessary if this potential adjustment is pursued.

#### Question 4

Do you agree with the potential changes identified for Transgrid's forthcoming Pricing Methodology proposal? If not, what else should be considered?

In light of the information presented in this Consultation paper and your own experience, how might the existing transmission pricing arrangements be improved? Please indicate whether you consider that the changes can be made within the framework provided by the existing Rules or whether a Rule change would be required.

Is there any additional information that Transgrid should provide to better enable customers to respond to price signals?

## Industry Direction

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### Policy Discussions

Broad policy discussions are continuing to occur on network pricing, with significant changes for Distribution rules made in 2014 set to apply from 2017. There has been less change to the Transmission Pricing Rules in recent years, the main being Modified Load Export Charge which was first payable in financial year 2015/16.

- COAG & the AEMC have recently made changes to the Distribution Rules, strengthening the emphasis on Long Run Marginal Cost.
- ENA/CSIRO – Energy Networks Association (ENA), in collaboration with the CSIRO, has initiated a Network Transformation Roadmap project which aims to develop pathways for the industry (predominantly distribution) during 2015–25. The ENA recently commenced a transmission pricing review and the draft optimal pricing criteria are closely aligned with Transgrid's current Pricing Methodology.
- Powerlink highlighted the priority issue from a transmission network perspective in their submission to the Queensland Electricity Inquiry<sup>5</sup> and also in their pricing submission regarding the alignment between distribution and transmission pricing to ensure consumers receive meaningful price signals that they are able to respond to. ElectraNet also considers the importance of pass through of pricing signals in their response to the Powerlink pricing consultation<sup>6</sup>.
- The Grattan Institute called for reforms to provide consumers with incentives to use the network more efficiently, especially at peak times, and reduce future network investment in their “Fairer Pricing for Power” report<sup>7</sup>.
- Customers have advised us that they are seeking transmission pricing that is easier to understand and more accessible. Concerns have also been raised regarding clean energy and how effective transmission pricing signals are for renewables.

Transgrid's aim is to ensure the Pricing Methodology aligns with these future directions and customer objectives. Our highest priority is to ensure that efficient pricing signals are passed through to consumers to ensure efficient network usage. As mentioned above Transgrid is actively considering challenging aspects of the rules relating to pricing to ensure responsiveness and equity across the customer base, whilst still maintaining alignment with the NEO, and is seeking stakeholder input on these as part of this consultation.

### Industry Trends

There are a number of emerging changes to the energy and demand patterns for electricity consumers in the NSW and ACT market region that could impact the type of transmission services provided by Transgrid looking out to 2035. These are the effects of energy efficiency, embedded small generation (such as solar PV) and electric vehicles. Transgrid actively monitors and has considered these emerging changes for impacts on the effectiveness of the pricing methodology in the next regulatory period.

- **Solar PV** – AEMO<sup>8</sup> estimates that solar PV generation will reduce the summer maximum demand and will have no impact on the winter maximum demand for all economic scenarios. By 2022/23 the solar PV generation is estimated to reduce the summer maximum demand by approximately 840MW which

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<sup>5</sup> Powerlink Queensland Submission to the Queensland Productivity Commission Electricity Pricing Issues Paper, November 2015

<sup>6</sup> ElectraNet, Submission to Powerlink Transmission Pricing Consultation Paper, 14 October 2015

<sup>7</sup> Wood, T., Carter, L., and Harrison, C. (2014), Fair pricing for power, Grattan Institute

<sup>8</sup> AEMO, National Electricity Forecasting Report for the National Electricity Market, 2013

will have negligible impact on the locational price providing a price signal to new and existing customers.

- **Energy efficiency** – The CSIRO<sup>9</sup> advises that energy efficiency, which means using less energy for the same activity or level of output, or increasing the level of output from the same amount of energy, is partly responsible for recent declines in annual energy consumption in NSW. AEMO<sup>10</sup> estimates that energy efficiency will cause a reduction in annual energy consumption of approximately 4500GWh by 2022/23. While energy efficiency measures also have the potential to reduce peak demands, thereby reducing the requirement for network augmentation, there is uncertainty about how reductions in overall electricity consumption may “translate” to reduction of peak electricity demand. Given the uncertainty in the effects of energy efficiency on peak demand and location of electricity use, the likely impact of energy efficiency measures on transmission network requirements is also uncertain. For this reason, the pricing methodology price structure remains resilient looking out to 2022/23.
- **Electric vehicles (EV)** – In 2011 the AEMC commissioned AECOM (a consulting company) to model the impact of EV. Their central scenario estimate was for an additional energy consumption of increasing from 205 GWh in 2020 to 2,626GWh in 2030 in the NSW region of the NEM. The study estimated EVs would not increase maximum demand as this would be heavily dependent on any smart recharge schemes or tariff structures employed. The findings under the shock scenario highlight the potentially large (although unlikely) demand implications for the transmission network in the extreme case of uncontrolled and unregulated charging of EV batteries, especially if uncontrolled charging occurs at the same time as network peaks. Given the low probability of the shock scenario and other analysis, the advice concludes that EVs are not likely to significantly impact electricity demand in the Sydney inner metropolitan area in the coming decades. However, these conclusions could be altered by future oil price rises, the rate of reduction in EV battery costs, and any move by governments to incentivise EV uptake. Given the uncertainty of the impact on EV no changes are proposed in the short term, however, Transgrid will continue to monitor the situation, including our battery storage project with City of Sydney.

Overall, the impact of smaller generation, electric vehicles and energy efficiency on the current price structure and pricing calculations in the current pricing methodology are considered negligible for the next regulatory period and remain resilient to changes in the use of the network.

## Cost Reflective Network Prices

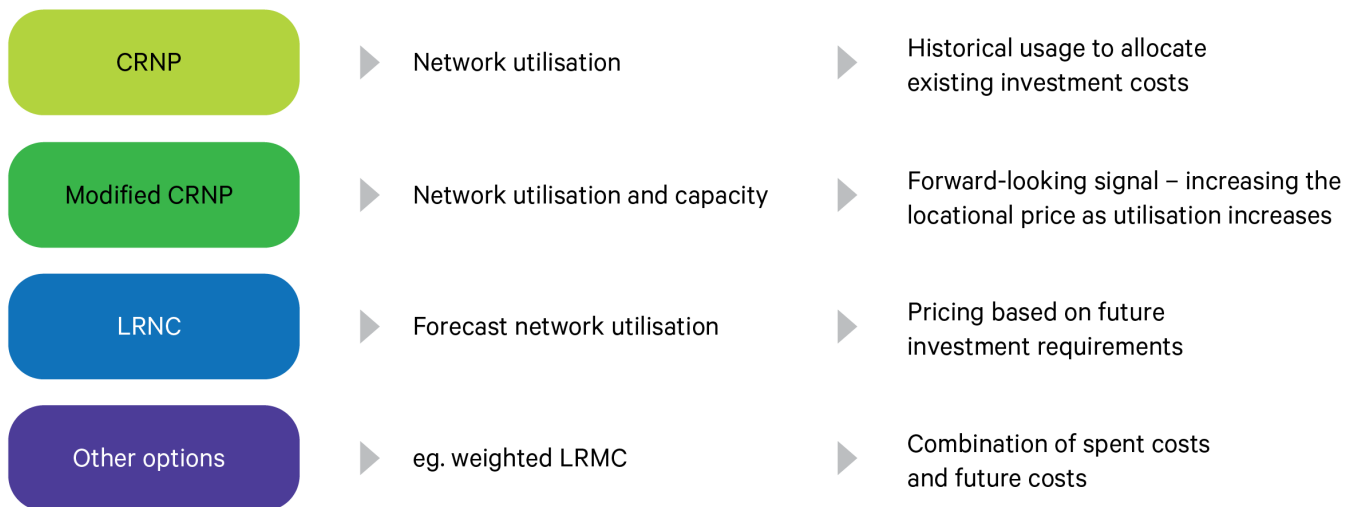
In compliance with the National Electricity Rules, a key economic requirement for a transmission Pricing Methodology is to provide customers with cost reflective network prices (CRNP) so that they can make efficient consumption and investment decisions. Whilst LRMC is now a requirement for DNSPs it is not allowable for TNSPs under the current Rules. The NERA<sup>11</sup> review conducted for the AEMC covered several LRMC approaches in detail, Perturbation (or Turvey) and Average Incremental Cost (AIC). The AEMC decided to allow DNSPs flexibility in implementing an LRMC methodology. Figure 4 below shows the differences, between standard and modified CNRP, as well as LRMC.

<sup>9</sup> Rai, A., Brinsmead, T., Reedman, L., Graham, P., Wall, J., and Cheng, J. (2014), Transgrid Powering Sydney's Future: Energy Efficiency, Report No. EP14312, CSIRO, Australia

<sup>10</sup> AEMO, National Electricity Forecasting Report for the National Electricity Market, 2013

<sup>11</sup> NERA Economic Concepts for Pricing Electricity Network Services: A Report for the Australian Energy Market Commission, 21 July 2014

Figure 4: Cost Reflective Network Pricing



Transgrid's believes that LRMC is still very much at concept stage for transmission and agrees with Powerlink's view in their 2015 pricing consultation that if a rule change to implement LRMC for TNSPs is sought then "a proper assessment of this course of action would need to have regard to the nature and complexities of the transmission pricing arrangements and ensure that any fundamental differences between transmission and distribution are appropriately taken into account. For example, in distribution, tariffs are typically set for particular classes of customers whereas transmission prices are focussed on serving load at a particular connection point".<sup>12</sup> The Transgrid Advisory Council also indicated that modelling of LRMC outcomes for customers in dollar terms is required prior to further consideration of any Rule changes<sup>13</sup>.

Our view is that the alignment of distribution and transmission tariffs, to the extent necessary, to allow pricing signals to reach retailers is the immediate priority. However, it may not always be economically efficient to pass through raw price signals to consumers and retailers should continue to have the flexibility to offer prices and price structures to customers that best meet their needs. For some customers a flat rate tariff may be preferred if they feel they are unable to respond to the price signals or if they believe that stability in pricing is of greater value than lower cost. Other customers hopefully do have an ability to respond and an efficient price signal reaching those customers will improve efficient use of the network. As ElectraNet noted in their response to the Powerlink Pricing Consultation in relation to LRMC "Structuring prices so as to simplify the pass through of transmission pricing signals to distribution customers through retail pricing outcomes appears to be the greater issue than the cost allocation methodology used to develop those prices<sup>14</sup>".

<sup>12</sup> Powerlink Queensland Consultation Paper Transmission Pricing, October 2015

<sup>13</sup> Transgrid Advisory Council, Meeting 2, 19 August 2016

<sup>14</sup> ElectraNet, Submission to Powerlink Transmission Pricing Consultation Paper, 14 October 2015



### Question 5

Do you see a benefit in a change to the cost allocation methodology for TNSPs? What information would you need to answer this question?

Is the method of calculation and charging the most important issue in terms of price signalling to end consumers?

Are there any other transmission pricing policy topics that stakeholders are concerned about? If so, please provide details?

## Approved Pricing Structures

Each TNSP in the NEM has a slightly different pricing structure approved by the AER. In most cases, these different pricing structures are reflective of historical prices that applied in each region prior to the start of the NEM. The Chapter 6A pricing principles<sup>15</sup> and the AER's pricing guidelines<sup>16</sup> were designed around the existing price structures to minimise price shocks to customers in the various regions. Table 4 summarises the current pricing structures for the TNSP's in the NEM, noting that Powerlink has proposed changes for their next period Pricing Methodology which are indicated in italics.

Table 4: TNSP Pricing Structures

TNSP	Locational Price \$/kW/month		Common Service and non-locational Prices \$/kW		Connection Price	CRNP
	Rates	Billing	Rates	Billing		
<b>Transgrid</b>	\$/kW/mth escalated historical average onthly maximum demand	\$/kW/mth actual monthly maximum demand	Historical annual maximum demand	Historical annual maximum demand	\$/day	Modified 365 days
<b>Powerlink</b>	\$/kW/mth sum of the average half hourly demand and the nominated demand (moving to opt in nominated max demand only)	\$/kW/mth sum of the agree nominated demand and the measured average half-hourly demand	\$/MWh or \$/MW/month contract maximum demand or historic energy usage	Historical energy or contract agreed maximum demand	\$/month	Standard 365 days (moving to Modified)
<b>Electranet</b>	\$/kW/day contract agreed maximum demand		\$/MWh or \$/MW/day contract maximum demand or historic energy usage	Historical energy or contract agreed maximum demand	\$/day	Modified 365 days
<b>TasNetworks</b>	\$/MW/month agreed contract maximum demand		\$/MW/month or \$/MWh contract maximum demand or historic energy usage		\$/month	Modified 365 days
<b>AEMO-Victoria</b>	\$/MW average historical maximum demand on the 10 system peak days	The lower of the contract average maximum demand (if elected), and the actual average maximum demand	\$/MW/month or \$/MWh contract maximum demand or historic energy usage	The lower of the contract agreed maximum demand, or the energy for the most recently completed 12 month period	\$/day	Standard 10 days

<sup>15</sup> National Electricity Rules Version 82, 1 July 2016

<sup>16</sup> AER Electricity transmission network service providers Pricing methodology guidelines, July 2014

## Recent revisions to the Pricing Rules

In addition to the annual transmission prices calculated by Transgrid for the NSW market region, as the co-ordinating TNSP for NSW, Transgrid is also required to calculate the inter-regional TUOS charge. The inter-regional transmission charging arrangement allows transmission businesses to levy a Modified Load Export Charge (MLEC is also referred to as IR-TUOS) on transmission businesses in neighbouring regions. Transmission load customers subsequently pay a share of the costs of transmission used to import electricity into their region from neighbouring regions. The MLEC applied to each transmission business is determined on a net basis, reflecting that all regions both import and export electricity.

The IR-TUOS Rule was proposed by the Ministerial Council on Energy (MCE) on 13 May 2010 and approved on 28 February 2013. Under this Rule change, MLEC was first applied and payable in the 2015/16 financial year. The MCE's intent in introducing this new transmission charging arrangement was to better reflect the benefits transmission provides in supporting energy flows between regions.

In its final determination, the AEMC considered that the MLEC will contribute to the National Electricity Objective by promoting efficient investment in, and use of, electricity services, in a number of important ways:

- Transmission businesses will have stronger incentives to pursue transmission efficient investments for which the costs fall predominantly in their own regions but the benefits fall in neighbouring regions. This is because they can recover some of the costs of the investment from the neighbouring region.
- Prices consumers face for transmission services will be more reflective of the actual costs incurred in providing those services.
- Credibility of, and confidence in, regulatory arrangements is improved as the costs of transmission capacity used for conveying electricity between regions is allocated to the regions that derive benefits from such capacity.

In making the final decision, the AEMC, decided that the MLEC should only recover the locational component of the total transmission charge which is allocated to consumers on the basis of their proportionate utilisation of intra-regional transmission capacity.

The AEMC decided that IR-TUOS be calculated on a standard cost reflective network pricing basis using 365 day historical load data from the last full financial year. The alignment of MLEC calculated by each co-ordinating TNSP is essential to ensure that the export charges reflect system costs in the same way as calculated in the neighbouring regions. Otherwise a charging disparity would result. Transgrid's Current Pricing Methodology includes detail on the calculation of the IR-TUOS charge under Appendix B and can be found on our website [www.Transgrid.com.au/what-we-do/our-network/our-pricing](http://www.Transgrid.com.au/what-we-do/our-network/our-pricing)

### Question 6

How well do you think Transgrid's current pricing methodology compares to the other TNSPs?  
Would you make any changes?

## Pricing methodology development and next steps

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Table 5: Pricing methodology development and next steps

Date	Activity
July 2016	<b>Implementation:</b> Current Pricing Methodology comes into effect
August 2016	<b>Development:</b> Transgrid internally assesses price impacts of the current Pricing Methodology to help inform our approach to the next Pricing Methodology
August 2016	<b>Event:</b> Transgrid discusses options to make amendments to the next Pricing Methodology with the Transgrid Advisory Council
September 2016	<b>Consultation:</b> Transgrid engages one-on-one with customers to understand their thoughts and views on the Pricing Methodology
September 2016	<b>Consultation:</b> Transgrid publishes an online discussion paper for stakeholders to make formal submissions and provide advice on the next Pricing Methodology
October 2016	<b>Development:</b> Transgrid assesses submissions
December 2016	<b>Consultation:</b> Transgrid publishes preliminary Transmission Pricing Methodology online, open for comments
December 2016	<b>Development:</b> Transgrid finalises Transmission Pricing Methodology and objectives
January 2017	<b>Development:</b> Revised methodology submitted to regulator

We look forward to hearing your needs and views on our proposed approach to the next Pricing Methodology. In the meantime, if you have any questions or would like to speak to a member of our team, please contact [pricing.consultation@Transgrid.com.au](mailto:pricing.consultation@Transgrid.com.au) and we will get back to you.