



Consulation paper summary

Pricing methodology guidelines: System strength pricing

**22 March 2022**

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AER reference: AER212713

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Consultation summary: Updating pricing methodology guidelines for system strength pricing

Background

On 21 October 2021, the Australian Energy Market Commission completed the “Efficient management of system strength on the power system” rule change.[[1]](#footnote-1) The rule change seeks a more forward‑looking, coordinated solution for the supply and demand of system strength in the National Electricity Market (NEM). This would enable the rapid integration of inverter‑based renewables and batteries into the NEM.

System strength is a quality of the power system that is related to the overall stability of the voltage waveform. System strength also includes fault level provision which is required for the operation of plant and network protection systems.[[2]](#footnote-2)

AEMO currently defines system strength as:[[3]](#footnote-3)

*“the ability of the power system to maintain and control the voltage waveform at any given location in the power system, both during steady state operation and following a disturbance.”*

These aspects of system strength are provided as a by-product of energy generation by synchronous generators.[[4]](#footnote-4) Conversely, grid-following inverter-based generation provides limited contribution to fault levels and can tend to exacerbate any voltage waveform instabilities.[[5]](#footnote-5)

A decline in system strength in the NEM has been noticed over the last several years as inverter-based generation replaces synchronous generation output. As a result, the AEMC published the *Managing power system fault levels* final rule on 19 September 2017. This rule change introduced a minimum system strength framework which required AEMO to declare system strength gaps when they occur, and TNSPs to procure services to meet the gap. This rule change also introduced the ‘do no harm’ rule, requiring connecting generators to mitigate any negative impact of their connection on the local system strength.

On 27 April 2020, TransGrid submitted a rule change proposal aiming to abolish the ‘do no harm’ requirement and amend the minimum system strength requirement.[[6]](#footnote-6) The proposal considered the existing framework was overly reactive and was resulting in significant delays to connection of new generation.

On 21 October 2021, the AEMC made a more preferable final rule which replaced the minimum system strength framework and ‘do no harm’ obligation in order to facilitate the proactive provision of system strength where it is needed in the network.[[7]](#footnote-7) A key finding was that TNSPs—designated as system strength service providers (SSSPs)—were best placed to identify options for system strength provision and to leverage economies of scale for efficient delivery of those options.

However, the process also identified the potential for inappropriate allocation of risk noting it is the connecting parties, not consumers, who are best placed to manage those risks.

As such, the final rule requires connecting plants to pay for the costs of ‘consuming’ the system strength service that SSSPs provide. Connecting plants would do this by paying a price based on the long-run costs of providing system strength services. This price is termed the system strength unit price (SSUP) and is intended to better coordinate the supply and demand of system strength by efficiently charging the parties for their use of centrally supplied system strength.

The final rule requires us to update our pricing methodology guidelines and set out the permitted methodologies for determining the SSUP. The appropriate TNSPs will then set the SSUP in accordance with their pricing methodology, which in turn must comply with our pricing methodology guidelines.

Prescribed structure of the system strength charge

The system strength charge gives generators and certain large loads the choice of either:

* Paying for system strength services that are centrally-procured by the SSSP. The costs involved will form part of the SSSP’s revenues for prescribed transmission services.
* Provide its own system strength, which was previously the only option available to connecting parties.

The system strength charge is designed to reflect the system strength costs that a connecting party would impose and has three components:

* 1. The system strength unit price (SSUP): reflects the change in the forward-looking cost of supplying system strength at each system strength node due to a change in demand for the service. The SSUP is fixed for a 5-year period for each system strength node, except for indexation if appropriate.
	2. The system strength locational factor (SSL): reflecting the localised nature of system strength. It changes the magnitude of the charge a connection would face based on its electrical distance from the closest system strength node.
	3. The system strength quantity (SSQ): this component is important for determining the efficient allocation of the cost of the system strength provided due to the amount of the service used by the connection.

Table Prescribed components of the system strength charge



Source: AEMC, Rule determination: Efficient management of system strength, 21 October 2021, p.25.

Role of the AER

The rule change requires us, the Australian Energy Regulator (AER) to modify the electricity transmission pricing methodology guidelines for two new requirements. Specifically, the National Electricity Rules (NER) require us to update the pricing methodology guidelines by 31 August 2022 to specify:

* Permitted methodologies for determining the system strength unit price component of the system strength charge, having regard to the following:
	+ the system strength charge structure in NER clause 6A.23.5;
	+ the desirability of providing efficient investment and system strength transmission service utilisation signals to actual and potential System Strength Transmission Service Users based on the long run cost of providing system strength transmission services at the relevant location;
	+ the desirability of consistent pricing structures across the NEM; and
	+ the costs and benefits associated with calculating, implementing and applying the methodology; and
* Principles for determining forecast annual system strength revenue and estimated actual annual system strength revenue.

Consultation process and stakeholder feedback

To meet the 31 August 2022 due date for amending the pricing methodology guidelines, we have set up the following milestones for this project.

Table Indicative milestones

|  |  |
| --- | --- |
| Date | Milestone |
| 22 March 2022 | AER publishes Consultation Paper |
| 8 April 2022 | AER stakeholder forum |
| 26 April 2022 | Submissions to Consultation Paper due |
| 6 June 2022\* | AER publishes proposed Pricing Methodology Guidelines |
| 19 July 2022\* | Submissions to proposed Pricing Methodology Guidelines |
| **By 31 August 2022** | **AER publishes final Pricing Methodology Guidelines** |
| *By 30 November 2022* | *Applicable TNSPs and AEMO submit amended proposed pricing methodologies*[[8]](#footnote-8) |
| *By 31 January 2023* | *AER publishes final decision on proposed pricing methodologies* |

Note: \*Dates are subject to change.

As a first step, we published a consultation paper seeking stakeholder feedback on:

* How we should approach this task.
* Issues and considerations for permitted system strength pricing methodologies.
* Issues and considerations for guidance on forecasting system strength revenues.

Stakeholder engagement is not only something we must have regard to when performing our regulatory obligations. It is a valuable input, which we encourage.

When we receive submissions that articulate stakeholder preferences, address relevant issues, and provide evidence and analysis, our decision-making process is strengthened. It also provides greater transparency, predictability and builds trust and confidence in the regulatory framework.

The consultation paper discusses the key issues we seek stakeholder feedback on. The consultation paper poses a number of questions to guide stakeholders and assist with their feedback.

A summary list of consultation questions is set out below. This document is published in a word version to allow stakeholders to draft their responses directly into it.

We request all submissions be in Microsoft Word or another machine-readable document format.

We invite stakeholder submissions on this consultation paper by **26 April 2022**. We will consider all submissions received by that date.

Please address submissions to:

 AERPricing@aer.gov.au

Warwick Anderson
General Manager – Network Pricing
Australian Energy Regulator

We prefer that all submissions are publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. All non-confidential submissions will be placed on our website. Parties wishing to submit confidential information should:

* clearly identify the information that is the subject of the confidentiality claim
* provide a non-confidential version of the submission in a form suitable for publication.

Questions in consultation paper

For convenience, this lists the questions we raise for stakeholders throughout the consultation paper, and references to the associated section of the paper.

**Section 2.2.2.2 – AEMO’s system strength requirement implementation**

1. Are there any implications of the TNSP and AEMO interdependencies that could affect the form of our system strength pricing methodology guidance?

**Section 2.3 – Context for this system strength pricing guidance**

1. Do you have any feedback on these or other relevant contextual factors and their consequences for the AER’s guidance development?

**Section 3.3 – Materiality considerations**

1. What materiality considerations should inform our assessment of potential pricing methodologies? Please provide any relevant evidence that you think should inform our materiality assessment.

**Section 4.1.1 – Issues in using forecasts beyond the 5-year regulatory determination**

1. Should our guidance specify a minimum period for “long-run”, and if so, is 10 years reasonable?

**Section 4.2.3.1 – Incentive implications of relative costs**

1. What scenario(s) (either illustrated in Figure 4.1 or others), do you think should inform our guidance development? Do you have a view on or evidence of the likelihood of these scenarios?

**Section 4.2.3.2 – Incentive implications of pricing stability**

1. To what extent is volatility in the SSUP between 5-year periods likely to have an adverse impact on efficient generator and IBR load investment decisions?
2. Is pricing stability desirable over successive SSUP pricing periods?
3. Do you consider the permitted pricing methodologies will affect SSUP pricing stability?

**Section 4.2.3.3 – Incentive implications of residual cost recovery**

1. Should the permitted pricing method(s) place risk with the party best placed to manage it, and should any residual unmanageable risk be allocated to the party best able to absorb the risk?
2. Do you consider that a LRAC permitted pricing methodology would support this?

**Section 4.3 – Costs of administering long-run pricing methodologies**

1. What issues should the pricing methodology guidelines consider in relation to minimising administrative complexity and implementation costs? What data or evidence would be useful to inform the response to this question?

**Section 5.1.1 – Is consistency with other transmission service pricing desirable?**

1. Is consistency with the pricing of other transmission services desirable?

**5.1.2 Can consistency impact innovation?**

1. Could allowing different system strength pricing methodologies support innovation? Do you expect this to be material and over what timeframe might it be material?

**Section 5.1.3 – Should there be consistency in the permitted long-run pricing methodology?**

1. Should the AER permit SSSPs to choose between different long-run pricing methodologies?
2. Could differing system strength pricing methodologies between SSSPs affect competition in the wholesale market?

**Section 5.2 – Annual indexation**

1. Should the system strength unit price be indexed? If so, what method should be used for indexation?

**Section 6.2.1 – The basis of revenue inputs**

1. What level of detail should be contained in the forecasting principles for system strength revenue inputs?
2. What revenue forecasting principles should be included in the pricing methodology guidelines?

**Section 6.2.2 – Treatment of confidential information**

1. Are the arrangements for treatment of confidential and commercially sensitive information in the existing pricing methodology guidelines sufficient for system strength services?

**Section 7.2 – Relevant differences between AEMO and other SSSPs**

1. What are the differences between AEMO as SSSP for Victoria and other SSSPs that may be relevant to our pricing methodology guideline?
2. Are the issues discussed in sections 4 to 6 above equally applicable to AEMO as SSSP for Victoria?
3. Are there any areas where our guideline should treat AEMO differently to other SSSPs because of any of differences between how AEMO is regulated and how other SSSPs are regulated?
4. Shortened forms

| Shortened form | Extended form |
| --- | --- |
| 1. AEMC
 | 1. Australian Energy Market Commission
 |
| 1. AEMO
 | 1. Australian Energy Market Operator
 |
| 1. AER
 | 1. Australian Energy Regulator
 |
| 1. NER
 | 1. National Electricity Rules
 |
| 1. NEM
 | 1. National Electricity Market
 |
| 1. SSSPs
 |  |
| 1. TNSP
 | 1. Transmission network service provider
 |

1. AEMC, Rule determination: Efficient management of system strength, 21 October 2021. [↑](#footnote-ref-1)
2. Historically, fault level (measured in MVA) has been used as the proxy unit of measurement for system strength. [↑](#footnote-ref-2)
3. AEMO, *Renewable integration study — stage 1 report*, April 2020, p. 50. [↑](#footnote-ref-3)
4. Synchronous generators like coal, gas and hydroelectric generators are electro-mechanically coupled to the power system which provide system services like inertia, reactive power, system strength and voltage wave form as a by‑product of their power production. [↑](#footnote-ref-4)
5. Inverter-based generators like many wind generators and solar PV are connected to the power system through power electronics. These non-synchronous generators can provide some system services like synchronous generators, however not automatically as a by-product of their energy generation. [↑](#footnote-ref-5)
6. TransGrid, *National Electricity Rules change proposal: Efficient management of system strength of the power system*, 27 April 2020. [↑](#footnote-ref-6)
7. AEMC, Rule determination: Efficient management of system strength, 21 October 2021. [↑](#footnote-ref-7)
8. Note, NER cl. 11.143.5 requires each ‘applicable TNSP’ and AEMO to submit a proposed amended pricing methodology by this date. The applicable TNSPs are defined as Ausgrid, AusNet Services, ElectraNet, Powerlink, TasNetworks and TransGrid. [↑](#footnote-ref-8)