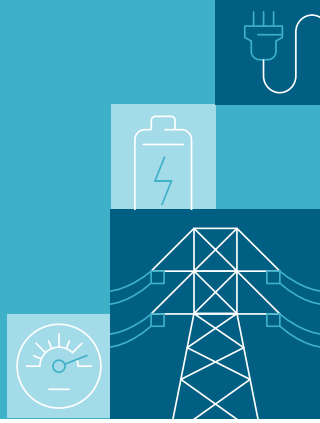
AEMO SERVICES

Consumer Trustee

Market Briefing Note

The value of electricity over time



Purpose of this document

This market briefing note, and the accompanying excel based file, the Relative Value Indicator, contribute towards a response to a frequently asked question by developers and investors - "what is the value of our project to NSW electricity consumers?"

As mandated by the *Electricity Infrastructure Investment Act 2020* (EII Act), financial value is to be the primary consideration for AEMO Services, as the Consumer Trustee, when making recommendations about Long-Term Energy Service Agreements (LTESA).

To support transparency and competition for LTESAs, AEMO Services is releasing the Relative Value Indicator to show a visual representation of the changing value of generation to consumers in the wholesale market over times of day and seasonally. AEMO Services currently intends to provide updates to this Relative Value Indicator ahead of each tender round.

The Relative Value Indicator is presented on a 'normalised' basis to highlight the relative value of electricity across times of day and seasonally; but does not represent a view of absolute wholesale price trends over time.

The information provided in the Relative Value Indicator can help prospective proponents to:

- Design and optimise their project to deliver electricity at times of high value.
- Structure their LTESA bid to maximise value to NSW electricity consumers.

This indicative view is provided for informational purposes only and should not be relied upon when making a bid.

Several financial value components of our tender evaluation framework require us to take a view on the value of electricity generation at different times of day and seasonally, and how this temporal profile of value will change in the future. These include:

- Wholesale electricity cost and market benefit – benefits will be higher where projects are generating at times of higher electricity value.
- Net generation LTESA cost – the cost to the Scheme Financial Vehicle (SFV)[1] will partially be a function of the future value of electricity.
- Net LDS LTESA cost – projects with a higher expected revenue potential are expected to incur lower LTESA costs.

To support proponents in preparing financial value bids we have developed the following three Market Briefing Notes:

1. Information on the financial value for generation projects.
2. Information on the financial value for LDS projects.
3. Information on the value of electricity over time that impacts the financial value of projects (this note).

The first two should be read prior to this note.

1. The SFV will be an entity established to intermediate cash flows between LTESA projects and Distribution Network Service Providers (and ultimately, NSW electricity consumers). It will establish and maintain the Electricity Infrastructure Fund set out in Part 7 of the EII Act to manage the cash inflows and outflows.

What is the Relative Value Indicator?

For each project that will be shortlisted, wholesale electricity forecasts can assess the value at the specific time when a project is expected to generate electricity based on its generation profile.

The modelling assumptions used to develop the Relative Value Indicator are considered a base-case scenario at the time of publication. The modelling principles which underpin this scenario are provided below:

- Assumptions related to demand-side factors, technology costs and transmission augmentation timings are closely aligned to the latest AEMO Integrated System Plan's 'middle of the road' Scenario.[2]
- Only economic entry of generation is assumed.
- No generation or long-duration storage infrastructure built as a result of the EII Act is included.
- Economic generator retirement no later than the latest announced withdrawal dates.

How does the Relative Value Indicator Work?

Each data point on the Relative Value Indicator is a multiple of the average NSW wholesale market electricity price in the respective year.

For example, a multiple of 1.5 at 10.30pm in November 2026 would mean that the average electricity price at 10.30pm over all November days in 2026 is expected to be 1.5 times higher than the average forecast electricity price for the whole of year 2026.

While the base case scenario reflects one view of potential future electricity prices, it is highly likely that some assumptions will not turn out to be true. Therefore, multiple permutations of the 'base-case scenario' that consider different modelling assumptions could be used in the assessment of financial value. This is further detailed in Note 1 and 2 for generation and LDS respectively.

Relative Value Indicator Question and Answers

This Q&A relates to the trends shown in the Relative Value Indicator.

1. **What drives higher prices in the evening peaks compared with lower prices in the middle of the day?**
   The abundance of rooftop and utility scale solar generation displaces higher cost generation during the midday periods, suppressing energy prices. Evening prices are higher, especially on days with low wind production, as higher-cost gas generation and storage is required to provide supply.
2. **What drives the more even high-price outcomes overnight after 2030 compared with 2025?**
   Prices become more even in the coming decades as an increasing amount of medium duration storage enters the system. These units can cycle frequently and are anticipated to operate competitively to limit the occurrence of price spikes caused by demand spikes or system constraints.
3. **What drives the higher winter prices compared with summer prices across the day, evening and night time in the latter years?**
   As coal plants retire, more solar and storage enters the system to manage midday and evening demand. However, in winter, when solar irradiance is low, there are several days where native demand exceeds the available solar production. This results in gas generation being dispatched during the day raising prices. On these days, medium-duration storage often cannot recharge resulting in the evening being largely served by gas as well. While additional generation capacity would reduce prices in winter, these limited occurrences of high prices are assumed not to be adequate to earn investors adequate returns.

2. In this case, the Step Change scenario from the 2021 AEMO Inputs, Assumptions and Scenarios (IASR) was used.

General Question and Answers

1. **How are LTESA costs to the Scheme Financial Vehicle reflected in the framework?**
   They are not incorporated in the Relative Value Indicator – this is purely a view of the value of generation in the wholesale market. Please refer to Note 1 and 2 for more information on the costs of LTESAs on the Scheme Financial Vehicle (SFV)
2. **Is this an official AEMO or AEMO Services price forecast?**
   No. As mentioned above, to support transparency and competition for LTESAs, AEMO Services is releasing the Relative Value Indicator to show a summary level visualisation of the value of electricity generation over time to provide transparency on a key component of financial value. The Relative Value Indicator also does not represent AEMO Services' view of future wholesale electricity prices.
3. **Is this the forecast used in the tender assessment process?**

   This base-case scenario is consistent with the principles AEMO Services intends to use to develop wholesale price forecasts for the assessment of financial value. AEMO Services may use multiple permutations of the base-case scenario to assess financial value across a range of outcomes.

Important Note

The information provided in the Relative Value Indicator is AEMO Services' view of the expected value of electricity generation across different times of day and seasonally, based on a set of assumptions as at June 2022. It should not be interpreted as a 'no EII Roadmap counterfactual' wholesale price forecast, and should not be:

- interpreted as advice.
- relied upon by proponents when making a bid.
- interpreted as a forecast of costs to consumers under the EII Roadmap.
- interpreted as a primary determinant of AEMO Services' recommendations to the SFV in respect of LTESAs.

Users of this information do so at their own risk.

This publication has been prepared by AEMO Services using information available at 14 October 2022.