



Purpose of this Document

This market briefing note sets out information relating to the financial value of generation projects to NSW electricity customers.

This market briefing note contributes towards a response to a question often asked of AEMO Services by developers and investors – “what is the value of our project to NSW electricity consumers?”

Our response to this question is broken down into three briefing notes:

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

By sharing this information with the market, AEMO Services intends to help projects understand the financial value of their projects to NSW electricity customers and provide competitive Bids.

What you need to know when preparing your bid

To score high in MC1 (financial value), projects need to demonstrate strong financial value, measured as the difference between benefits and cost. Per the information in this document, projects can demonstrate strong financial value through:

- A low LTESA Fixed Price and repayment threshold;
- A generation shape that produces energy at times of high value; and
- Any commitments to forfeit exercising the option in certain years and/or a shorter contract term.

Tender Guidelines

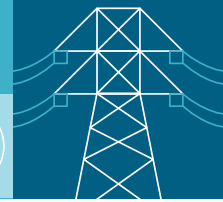
The Tender Guidelines are the single source of information for Bidders seeking to understand how AEMO Services will assess Bids in Tender Round 1. AEMO Services intends to assess Bids against eight Merit Criteria under a two-step process, as detailed in the Tender Guidelines. In summary

- Project Bids are sought from proponents and are assessed against six non-financial Merit Criteria, such as their impact on the electricity system, and regional economic development.
- Project Bids are shortlisted, and Financial Value Bids sought and assessed against:
 - Merit Criterion 1 – Financial Value.
 - Merit Criterion 2 – Commercial departures.

Merit Criterion 1 – Financial Value is used in the assessment of both Long-Term Energy Service Agreements (LTESAs) and Access Rights.

AEMO Services will make recommendations on projects to receive a LTESA and/or an Access Right based on a combined evaluation against all eight Merit Criteria detailed in the [Tender Guidelines](#) with financial value (Merit Criterion 1) being the primary consideration.

Note, the description of financial value in this market briefing is not an exhaustive or comprehensive summary of the evaluation process. AEMO Services retains discretion to score and assess Bids and make recommendations. It will not be held to a rigid assessment formula or policy, to ensure that it is satisfied that any recommendations it makes are in the long-term financial interests of NSW electricity consumers and otherwise consistent with statutory requirements.



Overview of the Financial Value of a Generation Project

The financial value of a generation project can be summarised in Financial Value Components, which can then be tested against a diverse set of modelled electricity market scenarios.

To best understand the value of a generation project, the modelled scenarios should represent a variety of future electricity market outcomes. Measured against the Financial Value Components, an attractive generation project will provide financial value under many future electricity market outcomes. A less attractive generation project may only provide financial value under a small number of future electricity market outcomes.



1. The financial value assessment will align with the requirements in *Electricity Infrastructure Investment Act 2020*, section 48(2) and *Electricity Infrastructure Investment Regulation 2021*, clause 26(4).

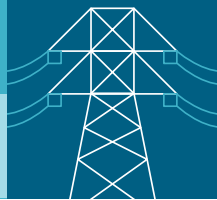
2. Relevant to EII Regulation s26(4)(a)(e)

3. Relevant to EII Regulation s26(4)(b)(d)(e)

4. 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.

5. Relevant to EII Regulation s26(4)(d)

6. Relevant to EII Regulation s26(4)(b)(c)(d) 7 Relevant to EII Regulation s26(4)(a)(d)(e)



Financial Value Components Deep Dive

Wholesale Electricity Cost and Market Benefit

The impact on the wholesale electricity cost of each project Bidding for a generation LTESA and/or Access Right can be considered through the following steps:

1. Wholesale electricity costs in NSW estimated using a counterfactual case without the project. This requires a market forecast of NSW demand and wholesale spot prices. This step is completed prior to receiving Financial Value Bids.
2. The downwards impact on the wholesale spot price from a project's expected generation output can then be estimated.
 - This can be done via a predetermined relationship between wholesale price and an additional 1 MW of generation at each 30 minutes interval (model interval) across a calendar year;⁸
 - A project is assumed to contribute marginal MWs of generation to the model interval according to the project's generation profile.⁹ This additional generation is expected to have a downward impact on the wholesale electricity market in model intervals where the project generates;
 - An estimate of wholesale electricity costs in NSW including the project is produced.

The wholesale electricity cost with the project included can be subtracted from the wholesale electricity cost without the project for each model interval to determine the project's net impact on wholesale electricity costs (which have a net impact for NSW consumers), per the following:

$$\sum_{i=1} (PriceBase_i - PriceAdjusted_i) \times NSWLoad_i$$

Where:

- $PriceBase_i$ is the wholesale price forecast which is derived in step 1 above without the project;
- $PriceAdjusted_i$ is the wholesale price forecast which is derived in step 2 above with the inclusion of the project; and
- $NSWLoad_i$ is NSW load assumed in the modelled scenario.

As described on page 2, this calculation will be repeated across multiple electricity market scenarios.

Access Fees

Where applicable, Access Fees will be a fixed annual benefit to the SFV, applied on a capacity basis, and consist of:

- A component that contributes to the cost of the infrastructure.
- Components that go to supporting community and employment initiatives.

The component of the Access Fee that relates to community and employment initiatives should be deducted from the Access Fee for the purpose of estimating a project's financial value.

Portfolio Impact

The subsequent entry of new generation will have an impact on the costs incurred to the SFV from its existing portfolio of LTESAs. As noted previously, the entry of new renewable energy generation can reasonably be expected to reduce wholesale spot prices.

This makes it more likely that:

- An existing LTESA project will exercise its option and cause the SFV to incur a liability.
- The value of the payments from the SFV to the project will increase as the difference between the wholesale spot price and LTESA fixed price widens.

While there is no portfolio impact for Tender Round 1, it is an important part of financial value and will be quantified in future rounds where an LTESA portfolio exists. Future guidance is expected to be provided on how portfolio impacts will be quantified in Tender Round 2.

8. We note this does not take into consideration that there is a risk that the generation may not actually be available when it is assumed to be available, resulting in inaccurately estimating its impact on the wholesale spot market price. See page 5 for further detail on how the uncertainty of generation is considered.
9. This stems from the policy intent of a LTESA/Access Right incentivising new project entry by providing greater revenue certainty.



Net LTESA cost

This component of financial value is relevant where a generation project also has an LTESA which creates a cost for NSW electricity consumers. The costs associated with an LTESA Bid consider the project's Bid terms, the Bid generation profile, and the expected LTESA Operator's option exercises behaviour based on a range of wholesale price forecasts. The Net LTESA cost can be calculated as follows:

1. Estimate project revenue

The Dispatch Weighted Average Price (DWAP) for each project can be forecast using generation output profiles provided by proponents (Bid generation profiles). The price forecast used can be the same adjusted wholesale spot price forecast used for the wholesale price benefit. Based on the DWAP, annual project revenues are estimated as:

$$\text{Project annual revenue before repayment} = \begin{cases} F \times V & \text{when exercised} \\ D \times V & \text{when not exercised} \end{cases}$$

Where:

- F =LTESA Fixed Price
- D =Dispatch Weighted Average Price
- V =Volume

2. Estimate cost to SFV based on LTESA exercise behaviour

Two scenarios are used for exercise behaviour assumptions:

- Constant exercise of the LTESA across the contract term (i.e. the project exercises every available option); and
- Exercise behaviour based on perfect foresight of market revenues.

These are simulated as two discrete scenarios, as detailed further on page 6. For each assumption, costs to the SFV can be estimated as follows:

$$\text{SFV annual cashflow before repayment} = \begin{cases} (F - D) \times V & \text{when exercised} \\ 0 & \text{when not exercised} \end{cases}$$

3. Estimate repayment threshold payments

Revenues to the SFV (offsetting costs to consumers) from the repayment mechanism could be estimated for the non-exercise periods based on the difference between the dispatch weighted average price and the repayment threshold price, per the below formula:

$$\text{Project annual repayment} = \begin{cases} 0 & \text{when } D \leq R \\ \text{Min}(75\%(D - R) \times V, P) & \text{when } D > R \end{cases}$$

Where:

- D =Dispatch Weighted Average Price
- R =Repayment threshold
- P =Cumulative net payments to date (from SFV to Project)

4. Assign value to Large-scale Generation Certificates received

Large-scale Generation Certificates (LGC) revenues could be assigned for all potential certificates recognising that the SFV could elect to sell the certificates.

$$\text{SFV LGC benefit} = \begin{cases} L \times V & \text{when exercised} \\ 0 & \text{when not exercised} \end{cases}$$

Where:

- L =LGC annual price forecast, assumed by AEMO Services

Uncertainty

Some projects have a more variable generation output profile than others, adding uncertainty to benefit and cost calculations. In particular, uncertainty of benefit and cost calculations which rely on predetermined Bid generation profiles is amplified when a project's generation uncertainty coincides with periods of high price variability. As an example, wind projects have highly uncertain generation output which may coincide with overnight prices which experience high variability as well.

An adjustment on cost and benefit estimations could be applied to projects with more variable Bid generation profiles and Bid generation profiles with high output during times of expected price variability, to account for the uncertainty in absolute cost and benefit estimates compared with projects of more certain Bid generation profiles.



Scenario Based Analysis

As shown on page 3, the wholesale market benefit, portfolio impact and LTESA costs are subject to forecast assumptions. For example, a scenario with high spot prices could show relatively higher benefits/lower costs, compared to a scenario with lower spot prices.

Due to the long-term nature of the LTESAs and high uncertainty in the market, financial value should incorporate scenario-based analysis to test how the relative performance of projects varies under different future market conditions.

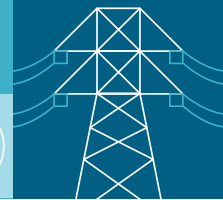
Using multiple scenarios allows for the evaluation of financial value to identify projects that deliver financial value across a range of plausible market outcomes. These scenarios could explore a range of electricity and LGC market outcomes, and test these against permutations in exercise behaviour and various reference years.

Scenarios could be ascribed a weight according to a view of the most likely future outcomes. The central scenario (we have published AEMO Services' view of the [value of electricity over time](#)) will not include the minimum legislative objectives to avoid the development pathway¹⁰ influencing the outcome of the tender. Across all scenarios, all existing, committed and previously successful LTESA projects are included in the forecasts.

Example Calculations (next page)

As an illustrative example, a calculation of each Financial Value Component is shown against four generic projects in the table on the next page. Please note that the numbers used in the example are illustrative and fictitious.

¹⁰. Per Section 45(1)(a) of the EII Act.



		Project type			
		Wind	Solar PV with storage	Solar	Biomass
Project characteristics	Project size (generation only) (MW)	150	100	100	50
	Additional components	N/A	25MW of storage	N/A	N/A
Bid assumptions	LTESA bid?	No	Yes	Yes	Yes
	LTESA contractual shape	No LTESA	Generation following	Generation following	Generation following
	Access Right bid?	Yes	No	No	Yes
Evaluation framework calculations (illustrative example for a given year)					
Wholesale market benefits	NSW load cost (pre-Project, \$m)				5,000.5
	NSW load cost (post-Project, \$m)	4,995.6	4,995.6	4,999.1	4,997.7
	Benefit estimate calculation (\$m)	5,000.5 – 4,995.6 = 4.9	5,000.5 – 4,995.6 = 4.9	5,000.5 – 4,999.1 = 1.4	5,000.5 – 4,997.7 = 2.8
LTESA cost	Project Cost estimate (\$m)	No LTESA	-1.2	-0.7	-1.1
	Project repayment (\$m)	No LTESA	0.1	0.1	0
	Cost estimate (\$m)	Nil	-1.2 + 0.1 = -1.1	-0.7 + 0.1 = -0.6	-1.1 + 0 = -1.1
Portfolio	Portfolio impact (\$m)	Not applicable for Tender Round 1			
Access fee	Access fee benefit (\$m)	0.3	No Access Right	No Access Right	0.1
Uncertainty	Uncertainty (\$m)	-0.20	-0.05	-0.13	0
Evaluation framework financial value (illustrative example for a given year)					
Value	Financial value (\$m/MW) = sum of wholesale market benefits, LTESA costs, portfolio impact, access fee and uncertainty penalty	[4.9 + (0.3) + (-0.20)] ÷ 150 = 0.03	[4.9 + (-1.1) + (-0.05)] ÷ 100 = 0.04	[1.4 + (-0.6) + (-0.13)] ÷ 100 = 0.01	[2.8 + (-1.1) + (0.1) + (0)] ÷ 50 = 0.04

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