

Purpose of this Document

This market briefing note provides further information on the outcomes of Tender Round 1 and the assessment considerations.

AEMO Services announced the outcomes of its inaugural tender on 1 May 2023. Four Long-Term Energy Service Agreements (LTESAs) were signed following the completion of a highly competitive tender process. AEMO Services’ mandate is to recommend LTESAs that are in the long-term financial interest of NSW electricity customers through its competitive tenders.

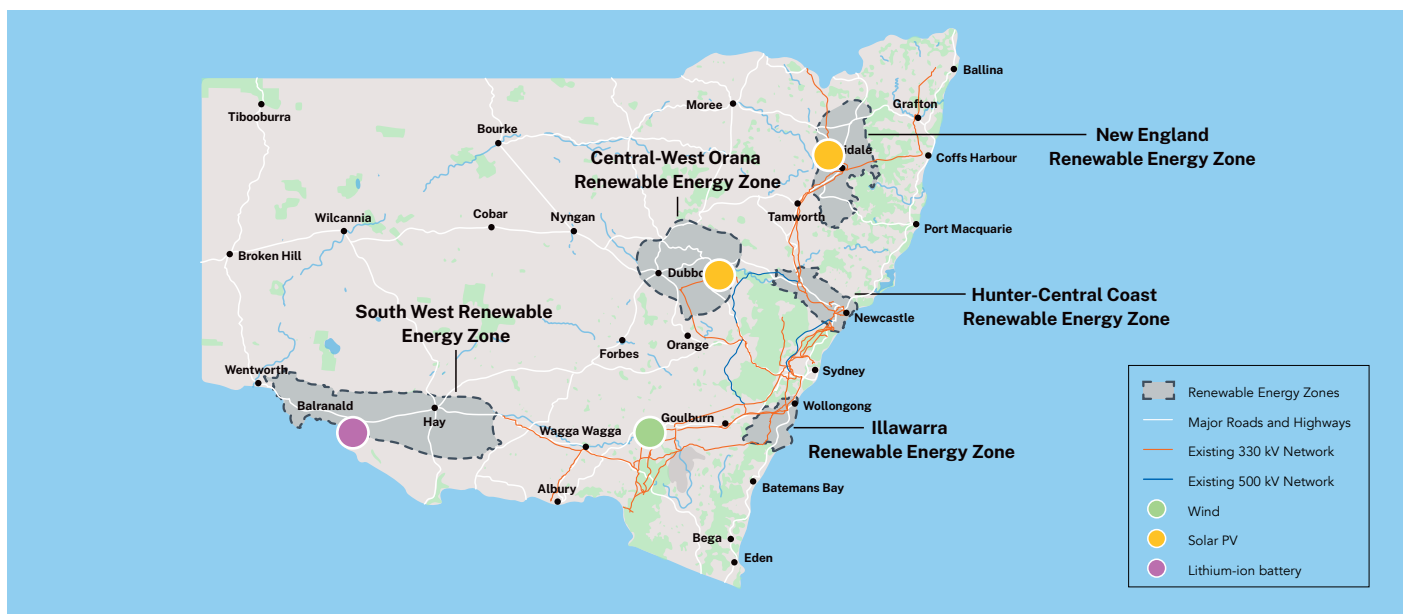
The purpose of this briefing note is to provide more transparency on the Bids that were successful in Tender Round 1.

LTESAs are pioneering a world-first approach to incentivising the market to bring forward new energy infrastructure investment in New South Wales (NSW).

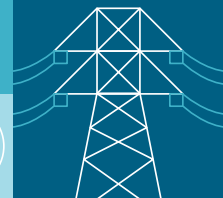
Their design is intended to protect investors from the risk of unexpectedly low revenues, acting as an insurance product that can spur investment and lower the cost of financing.

Two solar farms and one wind farm are now contracted under generation LTESAs. One lithium-ion battery is contracted under a Long Duration Storage (LDS) LTESA – demonstrating that batteries can be a competitive technology in providing eight hours (or more) storage duration. All projects are expected to be operational by 2026. All successful bids were Default Bids, meaning the bid terms and key variables are aligned with the default values set by AEMO Services.

Figure 1: Location of projects awarded LTESAs in Tender Round 1



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Generation and Long Duration Storage LTESA Bid Prices

The tables below provide an overview of the projects and the Bid price features.

Table 1: Generation LTESA Bid Prices - Tender Round 1

Project description	Bid Price features
Stubbo Solar Farm is a 400MW solar farm project expected to generate more than 1,100 GWh p.a.	Fixed Price is in fixed nominal dollars. The Real Dollars Equivalent is below \$35/MWh.
New England Solar Farm is a 720MW solar farm project expected to generate around ~2,000GWh p.a.	Less than 100% of each project’s output is contracted to the LTESA.
Coppabella Wind Farm is a 270MW wind farm project expected to generate more than 850GWh p.a.	Fixed Price is in fixed nominal dollars. The Real Dollars Equivalent is below \$50/MWh. Several potential swap start dates have been forfeited.

Table 2: LDS LTESA Bid Prices - Tender Round 1

Project description	Bid Price features
Limondale BESS is a 50MW battery energy storage project. The project will be oversized initially to provide in excess of 8 hours of storage duration, and will maintain at least 8 hours storage duration across the LTESA term.	The awarded Annuity Cap is in real dollars, subject to a 3% annual escalation cap. Up to 14 financial years’ worth of Annuity Periods will be available. AEMO Services has provided a price indication further below.

Merit Criteria and Weightings

Table 3 and Table 4 provide an overview of the range of scores achieved by Bids in Tender Round 1 for each Merit Criteria. The weighting of each Merit Criteria in Tender Round 1 is also shown. The weightings are shown for transparency and AEMO Services may change the weightings or Merit Criteria for future tenders. Further, AEMO Services continues to evaluate whether criterion weightings should be disclosed in the Tender Guidelines. The reason for not doing this for Tender Round 1 is that publication of weightings ahead of a Tender Round can have unintended consequences and undermine outcomes for NSW electricity customers.

Merit Criteria 1 is the most heavily weighted as s48(2) of the Electricity Infrastructure Investment (EII) Act requires the financial value of LTESAs to be the primary consideration for the Consumer Trustee. However, performance across all Merit Criteria is considered in the award of an LTESA. The experience in Tender Round 1 indicates that performance in Merit Criteria other than Merit Criteria 1 can be influential in the final ranking should the range of Merit Criteria 1 scores be smaller.

Table 3: Insights on Financial Value Bid Stage and assessment outcomes in Tender Round 1 for generation and long duration storage LTESAs

Merit Criteria (MC)	Weighting in Tender Round 1	Score Range	
		All Bids	Successful Bids
Financial Value Bid Stage			
MC1: Financial value	40%	0 - 3.2	2.0 - 2.9
MC2: Commercial departures ¹	6%	0 - 4	4 - 4

¹**Note:** MC2 has a relatively low weighting compared with the remaining Merit Criteria, however it may have an elevated impact on the final recommendation relative to its weighting. For example, a Bid which scores highly in other Merit Criteria may not be recommended if it would require extensive negotiation before becoming ready for execution or is deemed to be non-compliant with the EII Act.



Table 4: Insights on Project Bid Stage and assessment outcomes in Tender Round 1 for generation and long duration storage LTESAs

Merit Criteria (MC)	Weighting in Tender Round 1	Score Range	
		All Bids	Successful Bids
Project Bid Stage			
MC3: Impact on electricity system	9%	1.5 - 3.5	2 - 3.5
MC4: Pathway to commercial operation	9%	1 - 4	3 - 4
MC5: Organisational capacity to deliver Project	9%	1 - 4	3 - 4
MC6: Land use considerations	9%	1 - 4	2 - 3
MC7: Community engagement and benefits	9%	0.5 - 4	2 - 3.5
MC8: Regional economic development	9%	0 - 3.4	1.7 - 2.3

Please note that the above assessment represents the weightings and scores applied by AEMO Services' Tender Assessment Committee (TAC). The Board of the Consumer Trustee uses the TAC's assessment as a key input to its decision making process, but that input is not determinative of how the Consumer Trustee will ultimately exercise its discretion in deciding which Bids to progress.

The Consumer Trustee will only recommend a Bid where it considers that the recommendation would be in the long-term financial interests of NSW electricity customers (having regard to the assessment as a whole), and the recommendation satisfies or is consistent with all relevant statutory requirements and duties.

Generation LTESA

The [financial value of a Bid for a generation LTESA](#) is measured by the impact on the NSW wholesale electricity cost of the project and the net LTESA forecast costs and benefits under many future electricity market outcomes. For the two solar farms, a key driver of value was the low Forecast LTESA Cost which made these bids attractive. The wind project was forecast to have low Forecast LTESA Cost but also high benefits owing to a valuable generation profile. All bids have LTESA Fixed Prices that are below an estimated Levelised Cost of Energy (LCOE), indicating that they may be used for downside protection only.

The contracted generation projects are located across the State and scored highly against the Consumer Trustee's merit criteria.

Two of the projects awarded a generation LTESA were located inside the geographical boundaries of Renewable Energy Zones (REZ) and will connect

to the existing transmission infrastructure. As such, neither project requires a REZ Access Right, and their commissioning is not dependent on the construction of new REZ transmission infrastructure.

In addition to these features, the successful projects in the generation LTESA assessment had Financial Value Bids that were assessed to be in the long-term financial interest of NSW electricity consumers. Features of these bids included:

- LTESA Fixed Prices below estimated Levelised Cost Of Energy (LCOE) of the project;
- A forecast probability of LTESA option exercise below 50%;
- LTESA covering less than 100% of the project's generation output; and,
- Forfeiting of some swap periods, reducing the number of swaps available.

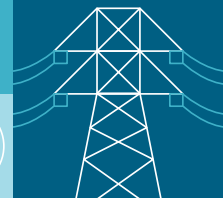


Table 5: Insights from generation LTESA assessment

Insight	Outcome
Bid price comparison with LCOE	<p>Contracted Fixed Prices are around 40% below estimated LCOE confirming bidders understand the value proposition and use cases for the LTESA. This can be achieved where the LTESA is planned to be used for downside protection and not cover all costs over a project's life.</p> <p>Successful bidders appear to have bid LTESA Fixed Prices around potential debt break-even prices to support financing.</p>
Probability of exercise	<p>Probability of exercise was forecast to be below 50% for successful bids when considered against the forecast scenarios in MC1 specific to Tender Round 1. All else being equal, a lower Fixed Price can reduce the probability of exercise and Forecast LTESA Costs.</p> <p>A high Fixed Price, even if the LTESA relates to only a small percentage of the project through a low Contracted Percentage, was assessed unfavourably if it had a high probability of exercise and high Forecast LTESA Cost.</p>
Contracted percentage	<p>Some bids put forward a contracted percentage of less than 100% which led to them being assessed as more competitive, compared with if they had bid 100% of their output with the same terms. The lowest Contracted Percentage across the successful bids is 50%.</p> <p>All else being equal, a lower Contracted Percentage was modelled to lower a bid's Forecast LTESA Cost. Reducing the Contracted Percentage may not have led to a low Forecast LTESA Cost if the Fixed Price was comparatively high.</p>
Forfeiting swap start dates	<p>Some Financial Value Bids forfeited at least one swap start date, including one of the successful bids. This made them more competitive for the same Fixed Price compared with if they had not forfeited any swap start dates. Forfeiting swap periods in later contract years was assessed more favourably than in earlier contract years. The extent to which forfeiting a particular swap period lowers Forecast LTESA Cost is dependent on the forecast wholesale energy price for that period.</p> <p>Forfeiting an LTESA swap period indicates that the project will not be reliant on LTESA payments in that period. This may be possible if they expect to be able to access higher revenues through offtake agreements or wholesale market revenues.</p>
Structured LTESA Fixed Price	<p>The Alternative Financial Value Bid gives Proponents more flexibility in how the LTESA Fixed Price changes between swap periods. LTESA costs are forecast against a range of future energy market scenarios in Merit Criteria 1. In the near-term, wholesale energy prices are forecast to be relatively high. In scenarios where they reduce in later years, there is less risk for NSW electricity consumers where a proponent:</p> <ul style="list-style-type: none"> • forfeits a swap start date in later years of the contract term; • offers Fixed Price bid in fixed nominal dollars, as a bid in real dollars increases over time while the wholesale price may reduce; and, • sculpts the LTESA Fixed Price such that LTESA Fixed Prices are low in periods where electricity prices are also forecast to be low.

Long Duration Storage LTESA

Limondale BESS was assessed to score well against financial criteria (cost, benefit, delivery time). It was also assessed to score highly in non-financial criteria (e.g., pathway to commercial operations, support for social licence initiatives).

Please refer to [Definitions](#) for further information on terms used in this section.



Table 6: Insights from LDS LTESA assessment

Key	Outcome
Storage duration	Overbuilding the storage duration of the project to initially provide in excess of 8 hours of storage duration, and maintaining at least 8 hours storage duration across the LTESA term, was assessed favourably for the successful project. Additional storage is assessed to provide higher absolute benefit to consumers.
Round-trip efficiency	Round-trip efficiency was found to be a material driver of benefits for a project. A project with higher round-trip efficiency requires a lower spread in energy prices to operate on a price-arbitrage strategy. Hence, a project with a relatively high round-trip efficiency was forecast to operate more frequently than a project with low round-trip efficiency, and was assessed to have a significantly higher consumer benefit.
LTESA cost	The Maximum Liability and Average Annuity Payment for the successful bid was forecast to be lower than for a Threshold LDS Bid.
Bid variables	Bidding a competitively low Annuity Cap was more impactful on assessment than having a competitively low Net Revenue Threshold. The Annuity Cap was seen to have more impact on assessment. If there is a trade-off between these two bid variables, then minimising Annuity Cap is preferred as it lowers the Maximum Liability to the SFV each year.
Financial Value²	Forecast Financial Value Equivalent for the successful project is 40% better than for a Threshold LDS Bid. Near-term forecast high prices increase a project's modelled opportunity to suppress wholesale prices. The successful bid's faster construction time increased its Financial Value through its access to higher, near term revenues (resulting in lower Forecast LTESA Cost) and higher forecast benefits to NSW electricity customers.

Merit Criteria 1 for Long Duration Storage LTESA

The key assessment metric of a Bid in Merit Criteria 1 is its Financial Value Equivalent. Proponents are encouraged to review the relevant [Market Briefing](#) for further information. Financial Value Bids are compared against a benchmark range of Bids as a consideration in the scoring method for Tender Round 1. A benchmark range of Financial Value Bids was developed by AEMO Services based on market data prior to the tender. This process simulates the formation of Bid Prices for a range of hypothetical projects with different technology types, financing parameters and cost inputs.

The higher scoring end of the benchmark range ("Highly Competitive") is based on a storage project with reasonable costs and financing parameters including good access to debt financing. The lower scoring end of the benchmark range ("Threshold") is based on a storage project with more expensive costs and poorer financing parameters including less access to debt financing.

The successful project, Limondale BESS, had a Financial Value Equivalent within the expected range. The project's oversized storage duration beyond 8-hours increased its assessed benefits relative to an equivalent 8-hour storage project. The technology type also has a relatively high round-trip efficiency when compared to the benchmark bids and competing technologies. Better round-trip efficiency provides a greater benefit to electricity customers and this is recognised under the MC1 methodology.

On the other hand, rising technology costs and supply chain pressures may have put upward pressure on the project's costs and hence Bid Prices, causing its Forecast LTESA Costs to be assessed as more aligned with the higher end of the range for benchmark projects.

²**Note:** The description of financial value in this market briefing is not an exhaustive or comprehensive summary of the evaluation process or indicative of any future evaluation process. AEMO Services retains the absolute discretion to score and assess bids and make recommendations. It reserves full flexibility in structuring and implementing its tender and assessment processes to ensure that it is satisfied that any recommendations it makes are in the longterm financial interests of NSW electricity consumers and otherwise consistent with statutory requirements. Proponents responding to future tender rounds should not rely on anything in this document as being indicative of a future evaluation process or outcomes.



Benchmark Range of Bids

Some parameters of a Threshold Financial Value Bid and of a Highly Competitive Financial Value Bid are shown in Table 7. Parameters should not be considered in isolation as they form part of the whole Bid which is assessed.

This information relates to Tender Round 1. For subsequent tender rounds, it is intended that the various inputs and benchmark ranges will be refined based on latest market data.

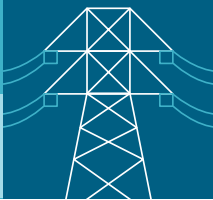
Table 7: Selected parameters of benchmark Financial Value Bids

Parameter	Threshold (Tender Round 1)	Highly Competitive (Tender Round 1)
First year of operation	2027-28	2025-26
Storage duration (hours)	8	8
Annuity Cap (\$/MW/year, escalating at 2.5% per year)	~220,000 for 40 years	~140,000 for 14 years (40% lower than Threshold LDS Bid)
Maximum Liability (\$/MW, undiscounted)	Highly Competitive is around 80% lower than Threshold LDS Bid	
Average Annuity Payment (%)	94%	87%
Average LTESA cost from 2030 to 2039 (\$/MW/year, undiscounted)	Highly Competitive is around 40% lower than Threshold LDS Bid. This is driven by the Bid having a lower Annuity Cap and Net Revenue Threshold, higher forecast revenues, and a lower percentage of Annuity Cap paid per year.	
Average project benefit from 2030 to 2039 (\$/MW/year, undiscounted)	Highly Competitive is around 20% higher than Threshold LDS Bid. Project benefits may be influenced by a project's round-trip efficiency, maximum capacity, storage duration, asset life and time to delivery.	

Cost Estimates for Long Duration Storage

The source for CapEx and cost of capital assumptions of both bids was the latest available AEMO IASR at time of assessment, however, additional cost premia have also been applied to reflect most recent movements in these assumptions. It was expected for Tender Round 1 that Highly Competitive Bids would request an Annuity

Cap that provided a guarantee of less than 30% of its Annualised Project Costs. A Threshold LDS Bid was expected to request an Annuity Cap that provided a guarantee of more than 80% of the Annualised Project Costs.



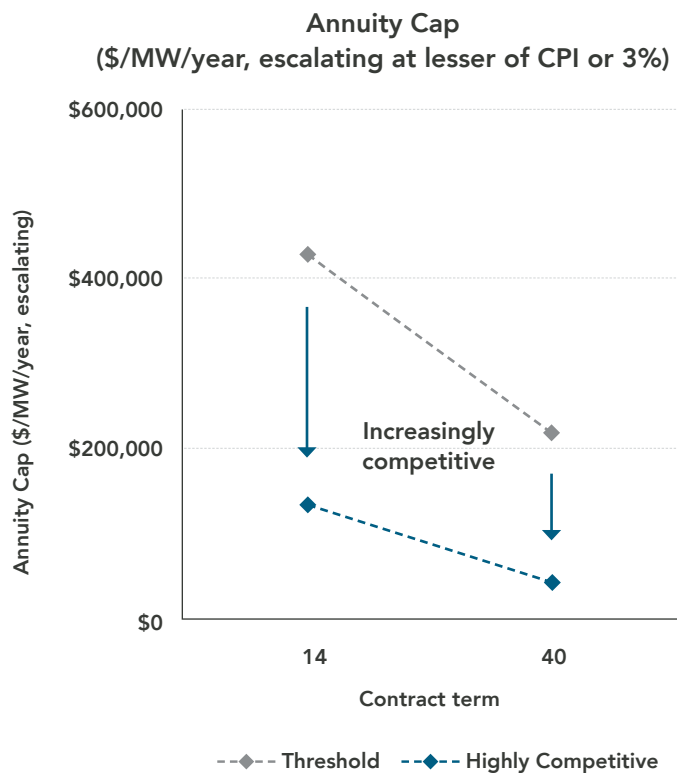
Cost Comparison Between Technologies

The Annuity Cap for a Bid sets the maximum potential LTESA payment to the LTES Operator in a financial year. **Actual payments may be less**, depending on Net Operational Revenue outcomes of the Project and its Net Revenue Threshold.

In Tender Round 1, assessing the LDS LTESA cost of a Bid in Merit Criteria 1 includes considering the value of the Annuity Cap in \$/MW/year, the Maximum Liability, Net Revenue Threshold, project's forecast Net Operational Revenues, the shape of Forecast LTESA Cost over time, and the contract term.

Figure 2 and Figure 3 shows combinations of Annuity Cap and contract term that are considered to provide an equivalent Financial Value.

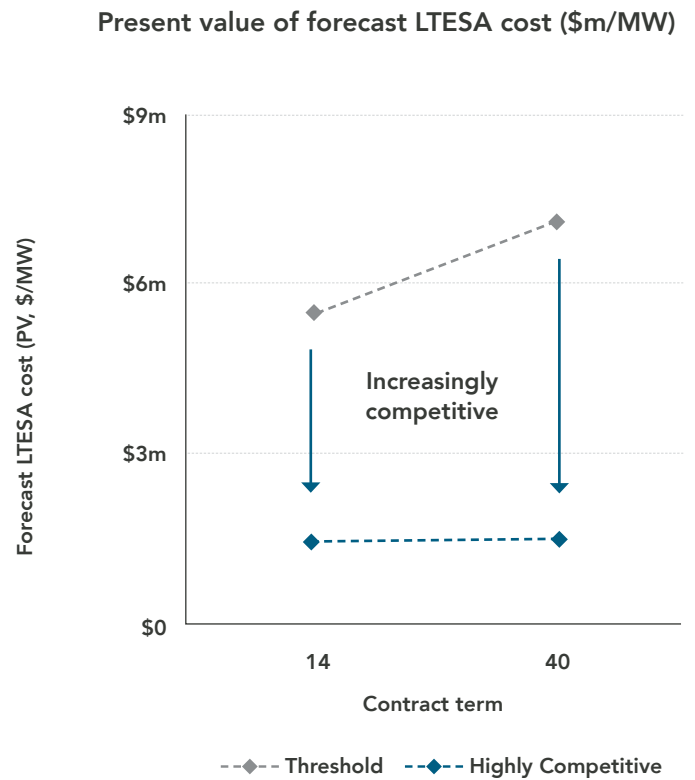
Figure 2: Annuity Cap by contract term and competitiveness for Tender Round 1

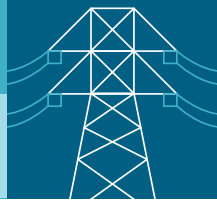


In these simplified examples, the Bid with a 40-year contract term is representative of a Bid for a Project with an asset life beyond 40 years, while the Bid with a 14-year contract term is for a Project with a shorter asset life. Other project parameters including degradation and round-trip efficiency are also not held constant between the Bids of different asset lives.

The charts in Figure 2 and Figure 3 are indicative only, and assumptions are necessary to allow different technologies and contract terms to be compared on a single chart. For example, referring to Figure 2, a project with a lower round-trip efficiency would require a lower Annuity Cap to be equivalent to an identical project with a higher round-trip efficiency.

Figure 3: Forecast LTESA Cost by contract term and competitiveness for Tender Round 1





Pumped Hydro Energy Storage and Battery Energy Storage Systems

In Tender Round 3 and Tender Round 5, AEMO Services looks forward to seeing Pumped Hydro Energy Storage (PHES) and BESS (Battery Energy Storage Systems) projects compete as well as a range of other technologies, such as Compressed Air Energy Storage. Moreover, projects which may not be expecting to reach commercial operations by 2030 are still encouraged to bid. There are no eligibility criteria requiring commissioning by 2030.

In general, PHES projects are expected to progress their development to further de-risk their project development and increase the competitiveness of their bids in future tenders.

The LTESA contract term is up to 40 years and is intended to manage risks around long-term revenue certainty.

AEMO Services continues to work with relevant stakeholders including EnergyCo, NSW Government, and proponents to support readiness of PHES projects tendering for LTESAs.



Definitions

Term	Definition
Annuity Cap	The Annuity Cap is a bid variable. It sets the maximum annuity that may be paid by the SFV to the LTES Operator in a Financial Year of an Annuity Period. Annuity Cap is an important input in modelling but is not considered in isolation in determining the Financial Value Equivalent of a Bid. The Annuity Cap for the Bids presented in this Market Briefing escalate at the lesser of CPI or 3%.
Average Annuity Payment	The average percentage of the LTESA Annuity Cap that is forecast to be paid per year, undiscounted. This is weighted across energy market modelling scenarios.
Average LTESA Cost from 2030 to 2039	The average LTESA cost is the average of undiscounted Forecast LTESA Costs over the period from 2030 to 2039. This cost estimate considers the Annuity Cap, the Net Revenue Threshold and the forecast Net Operational Revenue for a Project which may reduce LTESA cost to SFV.
Average Project Benefit from 2030 to 2039	The average project benefit is the average of undiscounted forecast project benefits over the period from 2030 to 2039. The forecast for project benefits considers the project's asset life, Commercial Operation Date, round-trip efficiency, degradation, maximum capacity, and storage duration.
Annualised Project Costs	This value represents the annualised equivalent of capital costs plus ongoing costs across the project's asset life, including consideration of cost of capital.
Financial Value Equivalent	Financial Value Equivalent is the net of the forecast costs and benefits for a Bid. Each of these are driven by multiple factors including but not limited to the Bid Prices of Annuity Cap and Net Revenue Threshold for LDS, or Fixed Price and Repayment Threshold Price for Generation LTESA bids. Please refer to the Market Briefings for further information.
Fixed Price	The strike price of each swaption period in a generation LTESA.
Real Dollars Equivalent	The Generation LTESAs awarded have Fixed Prices which are in nominal dollars and not subject to escalation. A real 2023 dollars equivalent of the Fixed Price has been shown in this Market Briefing
Forecast LTESA Cost	The present value in real 2023 dollars of forecast costs that may be incurred by the SFV for an LTESA, weighted across a range of future potential scenarios. Please refer to the Market Briefings for further information.
Maximum Liability	Equal to the sum of the full Annuity Cap being paid in every Annuity Period over the Contract Term.
Threshold LDS Bid	The Threshold LDS Bid is the Financial Value Bid including Annuity Cap and Net Revenue Threshold as well as the characteristics of the Threshold LDS Project which constitutes a proxy for the threshold for acceptable financial value to NSW electricity customers.
Threshold LDS Project	A threshold long-duration storage project is the hypothetical LDS project that is assessed as part of the Threshold LDS Bid for an LTESA.

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