Market Briefing

Financial value and system benefits evaluation for long duration storage Projects in Tender Round 6

Introduction

This Market Briefing sets out information on the evaluation of Merit Criterion (**MC**) 5 – *Financial value and system benefits* in NSW Roadmap Tender Round 6 (**NSW T6**), and recaps characteristics of competitive Bids from previous Tender Rounds.

MC5 evaluates the benefits of a Project to NSW electricity customers and the cost of the Long-Term Energy Service Agreement (**LTESA**) to the Scheme Financial Vehicle (**SFV**). This Market Briefing is specific to Long Duration Storage (**LDS**) Projects and is similar to the same document produced for other LDS Tender Rounds. The key differences to the NSW Roadmap Tender Round 5 (**NSW T5**) LDS Market Briefing are:

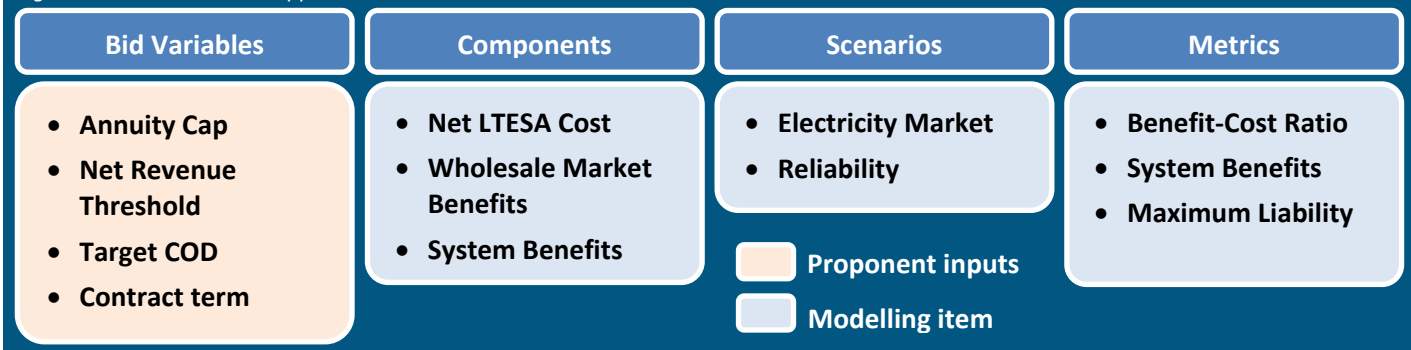
- The inclusion of an Electricity Statement of Opportunities (**ESOO**) style reliability assessment that addresses updated NSW regulations, which includes the introduction of System Benefits (Section 3.2) and Reliability Scenarios (Section 3.3.2);
- A revised approach to consider the aggregated benefits of Hybrid Projects (Section 3.5); and
- Latest tender insights from NSW T5 (Section 4).

What you need to know when preparing your Financial Value Bid

MC5 evaluates costs and benefits of the Project associated with your Financial Value Bid. LTESA Bid variables (**Bid Variables**) drive costs while a Project's physical characteristics (**Project Parameters**) informs both costs and benefits. The MC5 evaluation informs the Financial Value Metrics (**Metrics**) for scoring Bids from high merit to low merit.

How to achieve high merit – In the MC5 evaluation, costs and benefits are forecast by Net LTESA Cost, Wholesale Market Benefits and System Benefits (collectively '**Components**'). These Components are then modelled across Electricity Market and Reliability Scenarios (collectively '**Scenarios'**). Scenario-weighted components are used to calculate Metrics for MC5 scoring purposes. The figure below provides an overview of this process.

Figure 1: MC5 assessment approach overview



What makes a competitive Financial Value Bid – All else being equal, a low Annuity Cap will lower costs, whereas a strong network location and storage capacity overbuild will improve benefits. An early Commercial Operations Date (**COD**) can lower costs and improve benefits. Section 4 provides more detail on features of competitive Bids in MC5.[1]

What to provide – Proponents must provide Bid Variables and Project Parameters in the MC5 Returnable Schedule. For a given Project, to be as competitive as possible in MC5, Proponents should focus on providing a competitive set of Bid Variables to achieve the lowest Net LTESA Cost to NSW customers. Proponents are discouraged from changing Project Parameters between Stage A and Stage B. Changes to Project Parameters can result in a lower score in MC6 – Commercial Departures.

[1] The pathway and progress towards reaching its stated COD is also assessed in MC2 – Pathway to commercial operation as outlined in the Tender Guidelines.

1. Purpose of this Document

This Market Briefing aims to help Proponents understand the assessment process and methodology for MC5. It provides an overview of factors expected to impact the MC5 assessment and provides examples of what was assessed as being a competitive Financial Value Bid in previous Tender Rounds. This information is provided to support Proponents in preparing competitive Financial Value Bids.

Competition evolves with each Tender Round and as such, examples of competitive Bid characteristics provided in this Market Briefing are provided for information purposes only and are not indicative of the characteristics that may constitute a winning Bid.

In this Market Briefing:

- Section 2 summarises the assessment process.
- Section 3 provides an overview of the MC5 evaluation process, including treatment of Hybrid Projects.
- Section 4 outlines the characteristics of high performing Bids in previous Tender rounds.
- Appendix A provides further details on Net LTESA Cost and Maximum Liability.
- Appendix B provides further details on Wholesale Market Benefits and System Benefits.
- Appendix C provides further information on terms used throughout this Market Briefing.

This Market Briefing should be read in its entirety. For information on submitting a Financial Value Bid, please see the Tender Guidelines.

Please note, the description of the financial value assessment in this Market Briefing is not an exhaustive or comprehensive summary of the evaluation process. It is provided for information purposes only and is not intended as advice. Scoring against MC is a key input considered by AusEnergy Services Limited (**ASL**). Under the *Electricity Infrastructure Investment Act 2020* (NSW) (**EII Act**) ASL may 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. ASL retains discretion to score and assess Bids and make recommendations. It will not be held to a rigid assessment formula or policy. Nothing in this Market Briefing should be construed as binding on ASL or limiting its statutory discretion. To the extent of any inconsistency between this Market Briefing and the Tender Guidelines, the Tender Guidelines will prevail.

2. Tender assessment

The basis for conducting NSW Roadmap Tenders is underpinned by the Infrastructure Investment Objective (**IIO**) Reports, which sets the infrastructure development pathways to achieve NSW Roadmap objectives. The Tender Guidelines are the single source of information for Proponents seeking to understand how ASL (acting as the Consumer Trustee under the EII Act) will evaluate Bids.

ASL evaluates Bids against seven MC under a two-step process, as detailed in the Tender Guidelines. ASL will make recommendations on Projects to receive an LTESA based on a combined evaluation against all MC as detailed in the Tender Guidelines, with Financial Value being the primary consideration. Stage A and Stage B are summarised below:

Stage A: Project Bid MC
MC1 – Impact on the electricity system, MC2 – Pathway to commercial operation, MC3 – Organisational capacity to deliver the Project, MC4 – Community engagement, shared benefits and land use considerations.

▼

Stage B: Financial Value MC
MC5 – Financial value and system benefits, MC6 – Commercial Departures, MC7 – Regional economic development.

3. MC5 evaluation of a Project – an overview

The merit of a Financial Value Bid is based on scoring. LDS Projects are scored and ranked with Metrics - Benefit-Cost Ratio (**BCR**), System Benefits and Maximum Liability. Metrics are calculated from considering three Components - Wholesale Market Benefits, Net LTESA Cost and System Benefits, under a range of Scenarios, as detailed in Section 3.2.

A competitive Project is expected to achieve high BCR and System Benefits under a range of Scenarios, with low Maximum Liability. A less competitive Project may only be forecast to achieve high BCR and System Benefits in one or no Scenarios.

3.1. Objectives

This MC5 assessment approach is designed to identify Projects that can best contribute to meeting the Investment Objectives for LDS, which includes minimising costs to NSW electricity customers and meeting the NSW reliability standard. Please refer to the Tender Guidelines for the tender target and IIO minimum objectives.

Competitive Bids are expected to have a low Annuity Cap, low Net Revenue Threshold, provide a long duration of storage, be available to the market in-time to meet the minimum IIO targets, and be located in a strong network location.

3.2. Components

Components (Net LTESA Cost, Wholesale Market Benefits and System Benefits) are modelled using Bid Variables and Project Parameters submitted by Proponents through the Financial Value Bid Form and MC5 Returnable Schedule. Proponents are discouraged from changing Project Parameters between Stage A and Stage B. Changes to Project Parameters could result in a lower score in MC6 – Commercial Departures as outlined in Section 4.2.1 of the Tender Guidelines. Refer to Appendix A and B for more information on the calculation of Components.

Components drive the Metrics that MC5 scoring is based on, as outlined below and in 3.4.

Table 1: Components under MC5

Component	Summary
Net LTESA Cost	• Estimated costs to the SFV which may be incurred under an LTESA. • Calculated with the Annuity Cap and Net Revenue Threshold of the Bid, and the forecast revenues of the Project considering its Project Parameters. • There are no costs in periods where proponents have excluded an LTESA option. • Modelled across several Electricity Market Scenarios (see Section 3.2.1).
Wholesale Market Benefits	• Projects incentivised to enter the market through an LDS LTESA are expected to put downward pressure on wholesale electricity prices, reducing costs to NSW electricity customers. • Electricity market modelling is conducted to compare the wholesale price impact of the Project (**Project-Specific Case**) against baseline scenarios of the future without the Project (**Counterfactual Case**). • Modelled across several Electricity Market Scenarios (see Section 3.3.1).
System Benefits	• Forecasts a Project's potential to reduce unserved energy in NSW. • System reliability modelling may draw on methodologies used in AEMO's ESOO. • Modelled across different time-horizons in Reliability Scenarios (see Section 3.3.2)

3.3. Scenario based analysis

The Components are modelled across a range of Scenarios to test the robustness of outcomes. Table 2 lists the Scenarios and the Components they apply to. Three Electricity Market Scenarios will be used to model Wholesale Market Benefits and Net LTESA Cost. System Benefits use a distinct modelling approach to the other Components, with separate Reliability Scenarios reflecting reliability risks over different time-horizons.

Table 2: Scenarios used to assess the Components

Scenarios		Components		
		Net LTESA Cost	Wholesale Market Benefits	System Benefits
Electricity Market	Central	✓	✓	
	Low	✓	✓	
	High	✓	✓	
Reliability	Medium-Term			✓
	Long-Term			✓
	Long-Term (Single Year)			✓

3.3.1 Electricity Market Scenarios

Future electricity market prices are uncertain due to rapid changes underway in the National Electricity Market (**NEM**). Wholesale Market Benefits and Net LTESA Cost will be tested across Electricity Market Scenarios, representing a range of potential future market outcomes. This tests how Projects perform against multiple potential future pathways and helps understand potential risks, which is particularly important in the context of long tenor LTESA contracting.

The scenarios will consider a range of high and low average price and volatility. Projects would generally be forecast to have varying Wholesale Market Benefits and Net LTESA Cost between these scenarios. Competitive Projects are expected to have relatively high value across the range of scenarios.

Scenarios used in previous Tender Rounds have generally aligned with the narratives below:

- **Central Scenario:** Intended to represent the most likely future state, largely following assumptions from the latest Input Assumptions and Scenarios Report by AEMO and the IIO Report by ASL.
- **Low Scenario:** A scenario where market prices and volatility are low. This scenario is driven by delayed coal closures, low gas prices, low capex prices and high renewable uptake. This scenario has previously had lower Wholesale Market Benefits and higher Net LTESA Cost for Bids, compared with the Central Scenario.
- **High Scenario:** A scenario where there is high volatility through increased average volatility or extended duration of volatility events. This scenario is driven by high gas prices, supply chain constraints, slow renewable uptake and renewable energy droughts. This scenario has previously had higher Wholesale Market Benefits and lower Net LTESA Cost for Bids, compared with the Central Scenario.

Moreover, weather variations impact both renewable generation output and consumer demand. In previous tenders, three historical reference years were used per scenario to reduce the risk of basing the evaluation on a particular year. A range of years are selected. This could include historical reference years with high, medium, and low variable renewable energy (**VRE**) output. Each reference year has been weighted equally in previous tenders.

A weighting is assigned to each scenario based on relative importance for evaluation. This can consider the scenario's likelihood of occurrence (for example, a high weighting for the Central Scenario if it is considered the most likely) or risk-tolerance (for example, a reasonably high weighting on the Low Scenario to reflect preference for reducing Net LTESA Cost).

3.3.2 Reliability Scenarios

System Benefits reflect a Project's forecast ability to reduce unserved energy across different forecast horizons. Assumptions are generally based on inputs to AEMO's 2024 ESOO. The Reliability Scenarios are designed to reflect different horizons (stages) of the energy transition and aim to reward Projects that contribute the most to reducing system reliability risks.

The Reliability Scenarios are expected to consider the following narratives:

- **Medium-Term**: focus on broad NSW reliability risks in the medium term. Major networks limitations are largely resolved, and the modelling is based on the latest ESOO assumptions on announced coal closures.
- **Long-Term**: focus on reliability risks in the longer-term horizon where coal thermal plants in NSW are retired and includes high levels of VRE. Early coal retirements is expected to put upward pressure on potential

unserved energy.

- **Long-Term (low VRE)**: based on the Long-Term scenario but focuses on a single historical weather year where low VRE generation contributes most to unserved energy to consider its impact on System Benefits.

It is expected that as many as 14 historical weather reference years will be used for the modelling of Medium-Term and Long-Term. Only a single reference year will be considered for the Long-Term (low VRE).

The Long Term and Long-Term (low VRE) scenarios have been designed to meet the updated requirements introduced in May 2025 under *Electricity Infrastructure Investment Amendment Regulation 2025*.

3.4. Metrics

Metrics are used to translate modelled Components into information for assessing Bids. Metrics that are expected to inform scoring are outlined in Table 3. BCR is expected to be the primary metric for MC5 evaluation, supported by System Benefits and Maximum Liability. Projects are expected to perform competitively across Metrics to achieve a high score in MC5, for example, by having a high BCR driven by lower Net LTESA Cost and higher Wholesale Market Benefits or having a low Maximum Liability driven by a low Annuity Cap across the contract term.

Table 3: Metrics for MC5 assessment

Metric	Unit	Description	Direction of preference
Components			
Net LTESA Cost	$, net present value	Forecast costs to the SFV which may be incurred under an LTESA.	▼
Wholesale Market Benefits	$, net present value	Reduction in wholesale electricity market cost of meeting NSW demand.	▲
System Benefits	%, contribution	Project's potential to reduce modelled unserved energy.	▲
Key Metrics			
Benefit-Cost Ratio	$/$	Considers both scenario-weighted Wholesale Market Benefits and scenario-weighted Net LTESA Cost.	▲
System Benefits	*As defined in Components*	*As defined in Components*	▲
Maximum Liability	$	Total potential cost to the SFV calculated by assuming the Project is paid the full Annuity Cap for the contract term of the LTESA. Assumes the Project earns zero revenue and is not dependent on scenarios.	▼

Further Metrics may also be considered, or a combination of the metrics above, where they are developed to assess the benefits, cost and financial risks of Financial Value Bids. These additional metrics may be less aggregated (e.g. per scenario, or scenario-weighted) and may be based on one or several of the Components identified. Components and Metrics may be considered on an absolute or a per unit (i.e. per MW or per MWh) basis.

3.5. Hybrid Projects

Hybrid Projects are defined in the Tender Guidelines as co-located LDS and generation assets where both assets share a common connection point. This section provides a short summary on the evaluation approach of Hybrid Projects.

Projects that bid as a Hybrid will be contractually committed to deliver both the LDS and generation components under the PDA if awarded an LTESA. In the MC5 assessment:

- Net LTESA Cost will consider the potential payments under the LDS LTESA. Only Net Operational Revenues from the LDS component will be considered in the calculation of Net LTESA Cost, in alignment with the LDS LTESA.
- Wholesale Market Benefits will be assessed by considering the aggregate impact on wholesale prices from LDS and generation components.
- System Benefits will be assessed by considering the aggregate potential to reduce modelled unserved energy in NSW from the LDS and generation components.

4. Characteristics of high performing Bids in previous Tender Rounds

Previous LDS tender rounds

ASL has run three LDS LTESA Tender Rounds to date. Over 18GWh of Projects with at least 8 hours storage duration were awarded an LTESA.

Awarded Projects have represented a diverse range of technologies, including Lithium-ion Battery Energy Storage System, Pumped Hydro Energy Storage, Advanced Compressed Air Energy Storage, and Hybrid Projects.

Financial Value Bids should be tailored to the Proponent's needs while minimising Net LTESA Costs to NSW electricity customers. There is significant flexibility embedded in the LDS LTESA which can balance providing support to Proponents, while unlocking value for NSW electricity customers. Proponents are encouraged to use this flexibility across their Default and Alternative Financial Value Bids.

To be competitive, Bids are expected to have a combination of low Annuity Cap and low Net Revenue Threshold. Previous assessments have seen:

- Annuity Cap having a greater impact on MC5 through reduced Net LTESA Costs and Maximum Liability, compared with the Net Revenue Threshold.
- Bids improving their competitiveness by reducing contract term, excluding annuity periods, and providing nominal dollar Bids to limit the SFV's exposure to Consumer-Price Index (**CPI**).

This section draws on insights into the factors that made LDS LTESA Bids competitive in previous tenders, and is informed by the NSW T3 and NSW T5 Outcomes Market Briefing Notes. Please refer to these documents for further information.

Table 4 summarises some characteristics of high performing LDS Bids in the MC5 evaluation of previous Tender Rounds.

Table 4: Characteristics of high performing Bids in the LDS LTESA assessment from previous tender rounds

Key		Outcomes
Financial	Net LTESA Cost	A low Net LTESA Cost is critical for Bid success. The following features have previously been assessed favourably as they help lower Net LTESA Cost and Maximum Liability: • Low Bid Prices (in particular, a low Annuity Cap). • Reduced contract terms or excluding multiple Annuity Periods. • Nominal dollar Bid Prices which reduce the SFV's exposure to CPI risk. All else being equal, these features are expected to reduce both cost and risk to the SFV on behalf of NSW electricity customers.
	Bid Prices	While both low Annuity Caps and Net Revenue Thresholds contribute to competitiveness, the Annuity Cap has a greater influence on MC5 outcomes. Bidders often set Annuity Caps below their Net Revenue Thresholds, indicating they are accepting some market revenue risk and not relying on the LTESA to fully cover their investment costs. This approach helps reduce Net LTESA Cost and Maximum Liability.
	Maximum Liability	Maximum Liability considers the maximum potential payment from the SFV over the LTESA term assuming zero Net Operational Revenue. Projects were more competitive if they had a competitively low Maximum Liability. Annuity Cap is a key driver for minimising both Net LTESA Cost and Maximum Liability. Bids could also reduce their Maximum Liability by lowering their Net Revenue Threshold and Contract Term; by lowering potential CPI-risk or bidding in nominal dollars (all else equal); or, by excluding more Annuity Periods.
Physical	Storage duration	Overbuilding the Project to provide greater than 8 hours of storage duration has been assessed favourably, as the additional storage is assessed to provide higher absolute Wholesale Market Benefits, all else being equal. A longer storage duration is also expected to have higher System Benefits.

Key		Outcomes
		Several Projects in previous tenders demonstrated this by providing up to 15 hours of nominal storage duration.
	COD	An earlier COD has been assessed favourably where it allowed the Project to capture more market opportunities arising from early wholesale market volatility and fewer competing projects. This led to higher forecast Net Operational Revenues in earlier years which have the potential to reduce Net LTESA Costs, and can increase Wholesale Market Benefits where the Project provides nearer-term wholesale price suppression.
	Network location and Reliability Contribution	Network location is critical to providing high System Benefits, and a key driver in delivering Wholesale Market Benefits. Projects located in stronger parts of the NSW electricity network are expected to be able to reduce unserved energy and dispatch more effectively to load centres, particularly during peak demand periods.
	Asset life	Technologies with longer asset lives would be more competitive, all else equal, as they can earn Wholesale Market Benefits over a longer period. This would improve Metrics for the same Net LTESA Cost.

Appendix A: Further details on Net LTESA Cost and Maximum Liability

A1. Net LTESA Cost

The Net LTESA Cost is the forecast costs to the SFV which may be incurred under an LTESA. This is calculated using the Annuity Cap and Net Revenue Threshold (**Bid Prices**) and forecasts of the Project's Net Operational Revenues under different scenarios. The Project's storage duration, network location and load potential are considered in forecasting Net Operational Revenue. There are no forecast costs after the LTESA contract term or in excluded periods.

Competition in the process is expected to require Bid Prices to be set competitively low to demonstrate high Financial Value in MC5

Bid Prices are expected to reflect a Project's investment and operational costs, potential Net Operational Revenues and the residual funding gap. The Bid Prices are determinants of a Bid's Financial Value. The Annuity Cap sets an upper bound on annual LTESA payments and has a high impact on Net LTESA Costs. Projects with a lower Annuity Cap are likely to have lower costs to the SFV and NSW electricity customers. The Net Revenue Threshold, on the other hand, is a threshold for Net Operational Revenues, below which the SFV generally makes a payment to the Project[2]. Net Revenue Threshold may reflect the minimum revenue required to meet investor return expectations.

Bid Prices may not be directly comparable across Projects due to differences in capacity and duration. Projects with higher capacity and longer duration may naturally have higher Bid Prices but these may be offset by higher revenue potential which put downward pressure on Net LTESA Cost, or more broadly through higher Wholesale Market Benefits and System Benefits.

Net LTESA Cost is driven by the forecast Net Operational Revenue of a Project

For MC5, Net Operational Revenues are modelled as the sum of Potential Energy Arbitrage Revenues (**PEAR**) and Frequency Control Ancillary Market Revenues (**FCAS**). These can take a range of values across the modelled scenarios. These Components are brought together in the formulae below and used to estimate LDS LTESA costs.

$$Net\ Operational\ Revenue = MerchantRevenues_{PEAR} + MerchantRevenues_{FCAS}$$

Where:

- *Net Operational Revenue* is the estimated Net Operational Revenue for the Project in a given year.
- $MerchantRevenues_{PEAR}$ is the estimate of Potential Energy Arbitrage Revenues for the Project assuming it operates in a way that maximises energy arbitrage revenue in the wholesale energy market. This may capture additional value to Projects with higher durations as the additional energy storage capacity may be used to earn arbitrage revenues.
- $MerchantRevenues_{FCAS}$ is the estimate of FCAS market revenues.

[2] Revenues above the Net Revenue Threshold are shared between the project and the SFV. This is also intended to be reflected in the assessment.

The Net LTESA Cost calculation is designed to reflect the payment mechanics in the LDS LTESA structure[3]

Net LTESA Cost is expected to reduce as Bid Prices reduce, rewarding competitive Bid Prices. A low Annuity Cap is expected to be more impactful on assessment as it becomes increasingly likely to bind and limit payments to the SFV. This can affect both the Net LTESA Cost and Maximum Liability.

$$Net\ LTESA\ Costs = Present\ Value\left(CostEstimate_{year} - RepayEstimate_{year}\right)$$
$$for\ all\ scenarios\ and\ over\ all\ support\ years$$

$$CostEstimate_{year} = \begin{cases} AC\ if\ NOR \leq NRT - AC \\ AC - 0.75\left(NOR - (NRT - AC)\right)\ if\ NRT - AC < NOR \leq NRT + \frac{AC}{3} \\ 0\ if\ NRT + \frac{AC}{3} < NOR \end{cases}$$

$$(Only\ applicable\ if\ Historical\ Net\ Payment\ is\ non\text{-}zero)$$

$$RepayEstimate_{year} = \begin{cases} 0, & if\ NOR_{year} \leq NRT - AC \\ \frac{1}{8}(NOR - (NRT - AC)), & if\ NRT - AC < NOR \leq NRT + \frac{AC}{3} \\ \frac{1}{2}(NOR - NRT), & if\ NRT + \frac{AC}{3} < NOR \end{cases}$$

Where:

- AC is the Annuity Cap bid in a given year.
- NRT is the Net Revenue Threshold bid in a given year.
- *NOR* is Net Operational Revenue as previously defined.

A2. Maximum Liability

Maximum Liability represents the total potential cost to the SFV over the full LTESA term, calculated by assuming an extreme scenario where the Project earns no Net Operational Revenue and is paid the full Annuity Cap for the entire contract term. This Metric is scenario-independent and reflects the highest possible financial exposure for the SFV. It is expected to be equal to or greater than the Net LTESA Cost.

While both the Annuity Cap and Net Revenue Threshold influence Bid competitiveness, the Net Revenue Threshold does not affect the Maximum Liability calculation. Its impact is generally more significant in scenarios where the Project is forecast to earn high Net Operational Revenues. Projects with a competitively low Maximum Liability have been assessed favourably, as they present lower financial risk to the SFV.

[3] If net revenues are below NRT minus AC, the LTES Operator receives the full AC. The LDS LTESA annuity payment is reduced by 75% of every additional dollar of revenues above NRT minus AC. This is reflected in the formula as the additional term $0.75 \times \left(NOR - (NRT - AC)\right)$. This adjustment ensures that the LTES Operator continues to be incentivised to earn market revenues by retaining some of the additional net revenues it earns. As a result, the point above which the annuity payment is equal to zero is slightly above the NRT, and is equal to $NRT + \frac{AC}{3}$.

Appendix B: Further details on Wholesale Market Benefits and System Benefits

B1. Wholesale Market Benefits

Wholesale Market Benefits are measured based on the difference in the cost of meeting NSW electricity demand (load cost) between a Project-Specific Case and Counterfactual Case across all Electricity Market Scenarios, subject to their respective weightings. Any reduction in wholesale electricity market costs is attributed as a benefit of the Project. As such, Wholesale Market Benefits are expected to occur where a Project lowers load-weighted prices, for example, by reducing intra-day price spreads and volatility, or by improving supply adequacy and reducing curtailment of low-cost generators.

Both the Counterfactual Case (see ***ALC*** in the equation below) and the Project-Specific Case (see ***ALC'*** in the equation below) are based on the same forecast of market developments including NSW demand growth and wholesale spot prices, the only difference is that the Project-Specific Case includes the Project being assessed.

For this modelling, storage Projects are assumed dispatch based on price signals - importing energy during low price periods and exporting when prices are high. A Hybrid Project with renewable energy generation could be assumed to dispatch its generated energy according to its generation profile, which may contribute to Wholesale Market Benefits. ASL may also consider generation profiles provided by AEMO or its advisors for the assessment.

Wholesale Market Benefits are represented by the following calculation:

$$Wholesale\ Market\ Benefits = \sum_{s=1}^{n} W_s \times (ALC - ALC')$$

for the NSW region in the NEM, all Electricity Market Scenarios and over the Project's expected operational life

Where:

- W_s is the weighting of each modelled Electricity Market Scenario,
- *S* is a particular Electricity Market Scenario,
- *N* is the number of modelled Electricity Market Scenarios,
- *ALC* is the annual load cost in NSW in a scenario before the addition of the Project being assessed,
- *ALC'* is the annual load cost in NSW in a scenario after the addition of the Project being assessed.

While not explicitly shown, the summation in the above equation refers to the sum of discounted future cashflows to develop a present value.

B2. System Benefits

System Benefits considers a Project's ability to reduce potential unserved energy, and therefore reliability risks, in NSW. This contribution is calculated as the effectiveness of the Project in reducing modelled unserved energy, relative to an energy-unlimited hypothetical project optimally located for reliability in NSW.

Reliability modelling is conducted over the Reliability Scenarios using methods aligned with ESOO modelling, and is expected to focus on reliability factors relevant to NSW system reliability.

System Benefit for a Project measures the difference in modelled unserved energy between a Project-Specific Case and the Counterfactual Case for the Reliability Scenarios. A factor is expected to be calculated by comparing the Project's System Benefit against that of an energy-unlimited hypothetical project optimally located for reliability in NSW.

System Benefits may be represented by the following calculation:

$$System\ Benefit_{Project} = USE_{Project} - USE_{Counterfactual}$$
$$System\ Benefit_{Optimal} = USE_{Optimal} - USE_{Counterfactual}$$
$$System\ Benefit\ Factor = \sum_{s=1}^{n} W_s \times \frac{System\ Benefit_{Project}}{System\ Benefit_{Optimal}}$$
for the NSW region in the NEM and across all Reliability Scenarios

Where:

- *USE* is the modelled unserved energy in a particular scenario and case,
- W_s is the weighting of each modelled Reliability Scenario,
- *S* is a particular Reliability Scenario,
- *N* is the number of modelled Reliability Scenarios.

Appendix C: Glossary

Term	Definition
Annuity Cap	The Annuity Cap is a Bid Variable. It sets the maximum annuity that may be paid by the Scheme Financial Vehicle to the LTES Operator in a Financial Year of an Annuity Period. Annuity Cap is the key pricing variable for calculating Net LTESA cost.
Annuity Period	A period of one financial year in which an LDS LTESA annuity product is available.
Benefit-to-Cost Ratio (BCR)	One of the Metrics used in the MC5 evaluation. Calculated by dividing Wholesale Market Benefits by Net LTESA Costs (both scenario weighted and discounted).
Bid Prices	Refers to Annuity Cap and Net Revenue Threshold.
Bid Variables	Nominated inputs from a Project in the MC5 Returnable Schedule. Includes the pricing variables - Annuity Cap and Net Revenue Threshold - and contract term, excluded periods and Target COD.
COD	Commercial Operations Date. The COD is a Bid Variable.
Counterfactual Case	The no-project, baseline case for calculating Components for Electricity Market Scenarios.
CPI	Consumer-Price Index.
ESOO	AEMO's Electricity Statement of Opportunities.
Electricity Market Scenarios	Scenarios used for Electricity Market modelling.
Financial Value Bid	Tender Stage B Bid as defined in the Tender Guidelines.
Hybrid Project	Hybrid Projects are defined in the Tender Guidelines as co-located LDS and generation assets where both assets share a common connection point.
IIO	Infrastructure Investment Objective.
LDS	Long Duration Storage.
LTESA	Long-Term Energy Service Agreement.
Maximum Liability	Equal to the sum of the full Annuity Cap being paid in every Annuity Period over the Contract Term.
MC5	Merit Criterion 5 - Financial value and system benefits.
NEM	National Electricity Market.
Metrics	Metrics including BCR, System Benefits, Maximum Liability that are used to evaluate Projects. BCR is the primary metric for evaluation.
NSW T6	NSW Roadmap Tender Round 6.
Net LTESA Cost	As defined in Section 3.1 and Section A.3 of this Market Briefing.
Net Operational Revenue	Intended to cover all revenue streams for the Project that are received by the LTES Operator, netted off against permitted costs. This would be gross revenue generated through the wholesale energy market, ancillary markets, network support, any future emerging markets and any other eligible contracts, minus certain costs of purchasing energy to generate these revenues.
Net Revenue Threshold	The Net Revenue Threshold is a Bid Variable. As a Project's Net Operational Revenue increases toward the Net Revenue Threshold, the annuity payment from SFV reduces below the Annuity Cap. If Net Operational Revenue exceeds the Net Revenue Threshold, a 50% revenue sharing percentage applies and a repayment to the SFV may apply. Repayments are capped at Historical Net Payments. A lower Net Revenue Threshold may reduce the Net LTESA Cost, all else being equal, but it had a lesser impact on Net LTESA Cost than minimising an Annuity Cap.
Project Parameters	Project's physical characteristics.
Project-Specific Case	The project-Inclusive, project case for calculating Components for Electricity Market Scenarios.
Reliability Scenarios	Scenarios used for System reliability modelling.
Scenarios	Electricity Market Scenarios and Reliability Scenarios.
System Benefits	As defined in Section 3.1 and Section A.1 of this Market Briefing.
SFV	Scheme Financial Vehicle - the counterparty to the LTESAs and responsible for administering payments pursuant to section 62 of the EII Act.
USE	Unserved energy.
VRE	Variable renewable energy
Wholesale Market Benefits	As defined in Section 3.1 and Section A.2 of this Market Briefing.