Long-Term Energy Service Agreement Design

Consultation paper

August 2021

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Cover image: Large-scale solar generation

Contents

Key shortened forms

Bidder	An entity that submits its offer in the LTESA tender process
Department	NSW Department of Planning, Industry and Environment
DWAP	Dispatch-weighted average price
EII Act	*Electricity Infrastructure Investment Act 2000*
Fund	Electricity Infrastructure Fund established under Part 7 of the EII Act
LDS	Long duration storage
LTES	Long-term energy service
LTESA(s)	Long-term energy service agreement(s)
LTES operator	Party responsible for the operation and management of the generation, firming or LDS facility
REZ	Renewable Energy Zone
Roadmap	NSW Electricity Infrastructure Roadmap
Safeguard	Electricity Infrastructure Investment Safeguard
SFV	Scheme Financial Vehicle
Swap contract	A cash settled contract where the floating spot price is swapped for the contract's fixed price

Overview

Introduction

This consultation paper outlines proposed design concepts and structural elements of long-term energy service agreements (LTESA) for the purpose of gathering feedback. LTESAs are a central element of the Electricity Infrastructure Roadmap (Roadmap) and will offer an option to access price guarantees for eligible generation, long duration storage and firming projects. The terms and conditions for each proposed LTESA design concept are discussed broadly under two categories: price terms, and legal and project terms. Questions relating to the proposed LTESA design concepts are set out in this paper – we encourage stakeholders to provide their feedback.

Consulting on policy design and key implementation matters is an important part of the Department of Planning, Industry and Environment's Roadmap implementation strategy. The Department has adopted a structured approach to seeking feedback through a series of papers on key policy areas. Since Febraury the following papers have been released for consultation:

- Central-West Orana Renewable Energy Zone Access Scheme Issues Paper
- Tranche two regulations to support the Electricity Infrastructure Roadmap Issues Paper (PDF 805KB)
- **Long Term Energy Services Agreement Design** consultation paper[1] (this paper).

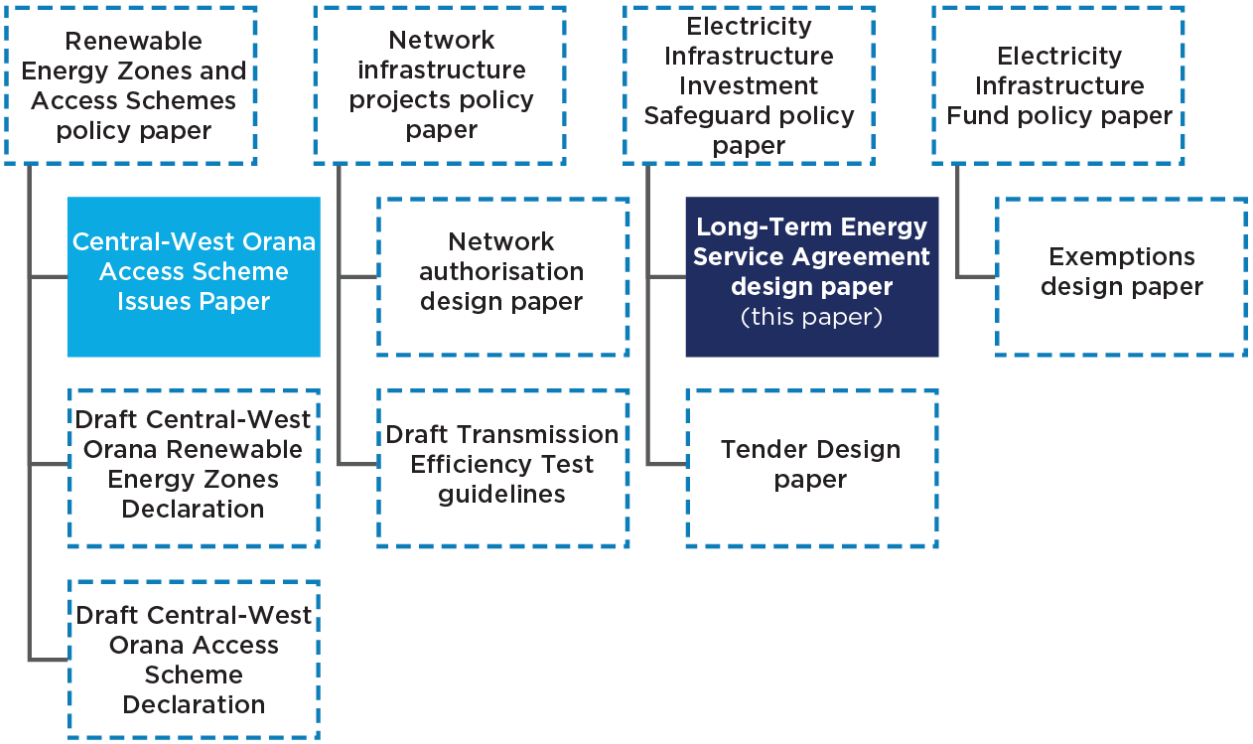
The next phase of stakeholder engagement includes a series of papers that cover the policy detail within each of the substantive parts of the *Electricity Infrastructure Investment Act 2020* (EII Act). These papers will provide policy context for each of the parts of the EII Act including how LTESAs fit into the broader framework of the Electricity Infrastructure Investment Safeguard.

The Department is developing further papers for stakeholder feedback including on administrative detail (e.g. on Tender Rules) and draft statutory instruments (e.g. a draft Central-West Orana REZ Declaration).

Figure 1 highlights the papers that are being released over the coming months (dotted line boxes), where this paper sits within that process (dark blue box), and identifies the paper that has been the subject of previous consultation (light blue box).

[1] The Consumer Trustee, not the Department, will make the decisions on the LTESA design. The Department has released this paper to support the Consumer Trustee during its establishment and to facilitate consultation feedback for the Consumer Trustee's consideration.

Figure 1 Papers for stakeholder feedback including administrative detail or draft statutory instruments



Structure of this consultation paper

This paper has been structured for readability and set out in the sections outlined below.

Section name with hyperlink	Content
Overview	Introduction, purpose and overview of LTESAs. An overview of the Roadmap and the role of the Department in this consultation phase.
Section 1: Our design concepts	Summary of proposed price, legal and project terms presented for the generation and long duration storage LTESAs. We are seeking your feedback to ensure our design concepts achieve the intended objectives.
Section 2: Context and roles under the Roadmap	Describes the Safeguard and provides the framework to offer financial support to eligible projects via LTESAs. Introduces the roles of the Consumer Trustee, Financial Trustee, Scheme Financial Vehicle and the Infrastructure Planner.
Section 3: LTESAs in detail	Presents an overview of the LTESA contract structure, parties to the contractual documents, and flow of payments between those parties. An outline of the competitive tender process is provided.

Section name with hyperlink	Content
Section 4: Price terms for generation LTESAs	Provides in-depth descriptions and illustrated examples related to our generation LTESA design concept including: the underlying cash settled swap, contractual shape/volume, option design, repayment mechanism, and negative price provisions of this structure.
Section 5: Price terms for long duration storage LTESAs	Outlines the market context for long duration storage and firming facilities. Also presents in-depth descriptions and illustrated examples related to the long duration storage LTESA design concept and the two other structures being considered, including alternative repayment mechanisms.
Section 6: Key legal and project terms	Provides an overview of key legal and project terms, and the proposed position and rationale for those terms.

It is acknowledged the following matters are important to scheme design and they will be addressed in future consultation materials:

- Renewable Energy Zone (REZ) access rights
- the interaction between the allocation of the LTESA and REZ access rights
- the ways in which the Consumer Trustee and Energy Corporation of NSW will work together to allocate LTESAs and REZ access rights.

Purpose of this consultation paper

This consultation paper intends to guide readers through key design concepts and structural elements of LTESAs. The terms and conditions for each proposed LTESA design concept are discussed broadly under two categories:

1. **Price terms** – the structural and commercial features that directly impact calculation of settlement cash flows such as: the derivative put option structure, fixed price, option length, repayment mechanism, and the contract volume and shape.
2. **Legal and project terms** – terms that impact projects' weighted average cost of capital, risk allocation and project development such as: pre-financial close interim milestones, conditions precedent, sunset dates, bonding, sharing of project cost reductions and change in law.

This paper does not provide extensive detail on potential designs or terms for the LTESA for firming projects, on the basis that learnings related to the long duration storage LTESA design will help to inform the design of the firming LTESA.

We welcome your views on key considerations on the firming LTESA design and may consider further consultation in the future.

Overview of LTESAs

LTESAs are a central element of the Roadmap and will offer an option to access price guarantees for eligible generation, long duration storage and firming projects.

LTESAs are option contracts intended to achieve the following objectives:

- incentivise investment in New South Wales by providing a protection mechanism against low wholesale electricity prices
- protect the financial interests of NSW electricity consumers by supporting sufficient (but not excessive) generation, long duration storage and firming projects

- encourage projects' participation in the National Electricity Market and wholesale contracts markets such as Power Purchase Agreements and markets that emerge as a result of the Energy Security Board's post-2025 review process
- achieve an efficient risk allocation between projects and NSW electricity consumers. The outcome of an efficient risk allocation is expected to be investors providing low-cost capital to fund projects
- be highly coordinated with the rollout of REZs and access rights for them. It is anticipated that projects will generally obtain both REZ access rights and LTESAs if they wish to build in a REZ. The intention is that these will be allocated through a single tender process, the aim being to reduce and simplify processes and ensure an integrated experience for investors. LTESAs will be available to projects outside the REZ but must show outstanding merit[2].

LTESAs will be awarded periodically through competitive tender. Subject to the targets and requirements set out in the EII Act, the amount of generation and long duration storage capacity that is ultimately tendered, and the timing of those tenders, is a decision for the independent Consumer Trustee. The Consumer Trustee will only conduct competitive tendering for firming LTESAs if directed by the Minister in accordance with the EII Act, and the Minister can only issue such a direction if the Energy Security Target Monitor considers the energy security target will not be met.

Background

Electricity Infrastructure Roadmap

The Electricity Infrastructure Roadmap (Roadmap) sets out an integrated, whole of system approach to attract and secure investment in the electricity infrastructure necessary to deliver a modern electricity system for New South Wales. The Roadmap will be implemented according to the framework provided by the EII Act.

Three-quarters of the State's electricity supply is expected to reach the end of its technical life within the next 15 years. Replacing the retiring plants creates significant risk to electricity prices and energy security outcomes for New South Wales. To protect NSW electricity consumers and the state's economic prosperity from these risks, the NSW Government has established the Roadmap as a framework to support private sector investment in the needed generation, long duration storage and firming infrastructure.

The Roadmap will deliver at least five REZs across New South Wales, which will enable 12 gigawatts of renewable energy generation capacity to be constructed by 2030. Two gigawatts of long duration storage will also be constructed by 2030. By connecting multiple solar farms, wind farms and energy storage projects, REZs enable a planned approach to infrastructure development, while fostering local community support. REZs also capitalise on economies of scale so the electricity generated is more affordable.

The Department's role during this consultation phase

The Department is supporting the establishment of the Consumer Trustee. As part of this establishment support, the Department is undertaking preparatory or preliminary work to facilitate the Consumer Trustee's early activities. This support is expected to continue while the establishment for the Consumer Trustee is ongoing.

Ultimately, the independent Consumer Trustee will have sole discretion on the final structure of the LTESA, within the constraints of the legislation. The LTESA terms and conditions and tender processes are likely to develop and evolve over time.

[2] The definition of outstanding merit and the assessment methodology are expected to be discussed as part of the consultation on the LTESA tender design.

Have your say

On behalf of the Consumer Trustee, the Department is seeking feedback on the proposed LTESA terms and conditions. Your views will help inform the final design of the LTESA.[3]

The paper sets out specific questions in each section and you are invited to provide your feedback via one of three methods:

- complete the Long-Term Energy Service Agreement Design Consultation Paper: Submission Form, also available on the Electricity Infrastructure Roadmap webpage
- download and complete the Word version of the submission form, also available from the Electricity Infrastructure Roadmap webpage and email it to Electricity.Roadmap@dpie.nsw.gov.au with **'Your Name – LTESA design consultation submission'** in the subject line
- provide a free form submission via email to Electricity.Roadmap@dpie.nsw.gov.au with **'Your Name – LTESA design consultation submission'** in the subject line.

The consultation will be open from 9 August to **5pm 10 September 2021**.

Please note that providing a submission is entirely voluntary, is not assessable, and does not in any way include, exclude, advance or diminish any entity from any future procurement or competitive process in regard to REZs and/or the LTESA under the Roadmap, or any other NSW Government program.

Confidentiality and intellectual property

The Department is committed to an open and transparent process, and all online responses and submissions will be made publicly available, except those requested to be kept confidential. The Department will redact personal details from submissions made by individuals to protect personal information. If a submission author considers any content in their submission to be revealing of protectable corporate intellectual property, they should clearly note and define this in their submission. In the absence of an explicit declaration to the contrary, the Department will assume that the information provided is not considered intellectual property of the respondent. Written submissions should be provided as documents that can be published on the Department's website.

If you wish for your written submission to remain confidential (except to Department project staff/officers and advisors, who are subject to appropriate confidentiality arrangements), please clearly state this in your submission, and only your organisation's name will be published.

The Department may disclose confidential information provided by you to:

- the NSW Minister for Energy and Environment or Minister's office
- the NSW Ombudsman, Audit Office of NSW or as may be otherwise required for auditing purposes or Parliamentary accountability
- directly relevant departmental staff/officers, consultants and advisors
- the Australian Energy Market Operator (AEMO), Energy Security Board (ESB), Australian Energy Market Commission (AEMC), Australian Energy Regulator (AER) or the Australian Competition and Consumer Commission (ACCC)
- the legal person appointed, or to be appointed, to the position of Consumer Trustee (including its staff/officers, consultants and advisors)
- the Clean Energy Finance Corporation (CEFC) or the Australian Renewable Energy Agency (ARENA) or distribution network service providers
- other parties where authorised or required by law to be disclosed.

[3] The Consumer Trustee is the sole and independent decision-maker in the design and implementation of the LTESAs. The content of this document, and the outcomes of any discussions arising out of it, should not be considered as instructive or binding on the Consumer Trustee by the State.

Where the Department discloses this information to any of these parties, it will inform them that the information is strictly confidential. The Department may publish or reference aggregated findings from the consultation process in an anonymised way that does not reveal confidential information.

Section 1: Our design concepts

Purpose of our design concepts

This section outlines the proposed, high level designs for the generation and long duration storage LTESAs. The design concepts are developed for feedback and are intended to achieve five key objectives outlined in the subsection Overview of LTESAs. The Department considered and evaluated several potential LTESA designs.

The final terms of each LTESA will be set by the Consumer Trustee through a competitive tender process and associated tender rules. It is expected the LTESA terms will change over time as the National Electricity Market changes and contracting structures emerge that better meet the LTESA objectives. Also, it is expected the Consumer Trustee may vary the LTESA terms between tender rounds to best meet the needs of NSW consumers.

Design concept for feedback: generation LTESA

Term	Design concept for feedback
Contract term	Up to 20 years. This duration is intended to be the shortest capable of delivering low-cost capital.
Option structure	Fixed number of options (e.g. 10 options) to enter a cash settled swap of a fixed duration (e.g. 2 financial years) during the contract term (e.g. 20 years).
Option period	Two financial years, being the fixed duration of the cash settled swap. It is noted that the wholesale contracts market favours durations of three months to three years.
Notice period	Notice of intention to exercise an option must be provided at least six months prior to the beginning of an option period. This notice period is to allow the Scheme Financial Vehicle to manage liquidity, consumer passthrough and any hedging activities arising from exercising the option.
Milestones and sunset dates	The LTESA will contain target dates for key project milestones. Where milestones are not achieved by a sunset date the LTESA would be terminated, and bonding forfeited. Our view is that the LTESA objectives are better achieved by allowing longer sunset dates than have typically been seen in the Australian market. The intention is to reduce the construction risk premium, provide flexibility for LTES operators to optimise procurement and to allow the development of sustainable engineering, procurement and construction, and manufacturing sectors.
LTESA fixed price	The fixed price per megawatt hour of the swap payment triggered upon exercise of the option. The fixed price is set through a competitive tender process and the policy intention is for the fixed price to be sufficient for the project to meet its debt service covenants, in an option period where the option is exercised.

Term	Design concept for feedback
LTESA repayment threshold price	A fixed price per megawatt hour; higher than the LTESA fixed price that is used to calculate potential repayments. The project will make repayments to the Scheme Financial Vehicle in a limited set of circumstances during non-exercise periods. The policy intent is that the LTESA repayment threshold price be set during the tender process, at or above, the project's targeted equity return.
Escalation	The LTESA fixed price and the LTESA repayment threshold price are fixed nominal (not escalating).
Contractual shape	Fixed shape and fixed volume[4]. The fixed shape will be provided by projects during the tender process.
Green rights and other products	The policy intention is that the underlying swap is 'bundled' during option exercise periods for electricity and all current and future green products. In exercise periods, the Scheme Financial Vehicle is entitled to any products or revenues from existing or new markets, including, applicable green rights (such as large-scale generation certificates (LGCs)) and other economic rights conferred on the project by regulation for its capacity or generation.
Negative price provisions	Zero-price floor and LTES operator holds negative price risk. This will mean the minimum wholesale price in swap payment calculations is set to zero. Negative pricing is an area where there are several approaches that might better meet the objectives of the LTESA.
Financial close price adjustments	The Scheme Financial Vehicle and the LTES operator are expected to share in net cost savings that emerge for projects between the tender and financial close, but it is a one-way mechanism and the parties will not share in net cost increases during that period. These cost reductions are expected to be reflected in a reduction in the LTESA fixed price. This mechanism is included to allow longer LTESA sunset dates, to recognise the procurement benefits associated with LTESA award and technology cost reductions.
Repayment mechanism	Applies in non-exercise periods if the LTES operator's dispatch-weighted average price (DWAP) is above its repayment threshold price. The repayment will be calculated as: **benefit-sharing percentage * (DWAP – repayment threshold price) * dispatched energy generation** *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator** The repayment mechanism has the following features: • adapted to support wholesale market contracting. For example, the LTES operator may receive up to a full reduction in its repayment obligation when the LTES operator has an eligible wholesale market contract • a standardised benefit-sharing percentage of 75% applies to the repayment calculation up to the maximum recovery

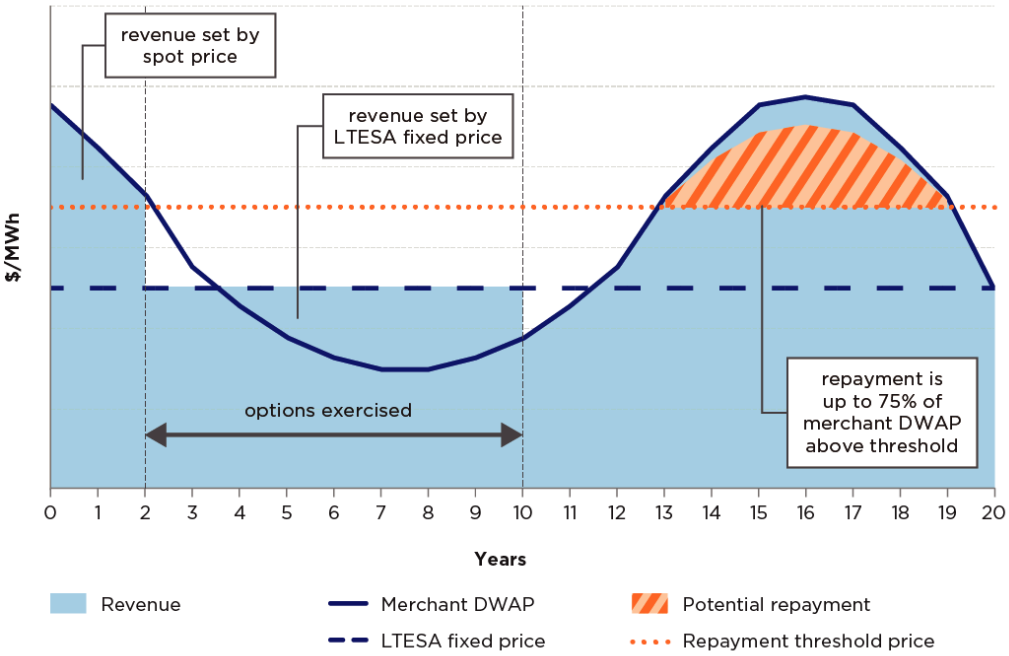
[4] Generation following shapes will be considered if stakeholder feedback demonstrates that a generation following shape better meets the LTESA objectives.

Term	Design concept for feedback
	• maximum recovery through the repayment mechanism is 100% of historical cumulative net payments from Scheme Financial Vehicle to LTES operator • based on the LTES operator's actual dispatch. The repayment mechanism has been included because of the put option structure. The repayment mechanism's purpose is to ensure NSW electricity consumers are repaid in circumstances where, for example, there are low electricity prices and significant payouts in the early years of an LTESA but high electricity prices and no option exercise during an LTESA's later years,[5] such that projects earn 'super profits'.

Figure 2 shows potential LTES operator cash flows with a generation project. The generation LTESA includes an option to exercise a swap contract and a repayment mechanism with repayment threshold price and benefit-sharing percentage. In this illustrative example:

- **Up to year 2** – the LTES operator receives the spot price for its dispatched energy generation.
- **Years 2 to 10** – the LTES operator exercises its options and receives the LTESA fixed price for its dispatched energy generation.
- **From year 10** – the LTES operator does not exercise its options and is paid the spot price for its dispatched energy generation. As there is a historical cumulative net payment from the Scheme Financial Vehicle to the LTES operator due to the previous exercise of the options in years 2 to 10, the repayment mechanism applies and is up to 75% of merchant revenues above the revenue threshold price.

Figure 2 Generation LTESA illustrative example



In this example, the LTES operator **did not** enter an eligible wholesale market contract. The Department is considering mechanisms that adapt the repayment mechanism where the LTES

[5] The repayment mechanism is also expected to include a hardship mechanism to mitigate risks to project finance lenders.

operator has a wholesale market contract. For example, where the LTES operator has entered an eligible wholesale market contract, an exemption to repayment could apply. This exemption could allow the LTES operator to meet its obligations under its wholesale market contract (e.g. Power Purchase Agreements).

Design concept for feedback: long duration storage LTESA

Term	Our design concept for feedback
Contract term	Up to 14 years for chemical batteries or up to 40 years for pumped hydro. The duration is intended to be the shortest contract duration capable of delivering low-cost capital for long duration storage assets. It is noted that different types of long duration storage assets have different asset lives and this is expected to be reflected in the LTESA contract duration.
Option structure	Fixed number of options to enter annuity payment contract which can be exercised in each option period during the contract term.
Option period	Two financial years. It is noted that the wholesale contracts market favours durations of three months to three years. For long duration storage, other markets are likely to emerge. These new markets could justify different option periods over time.
Notice period	Notice of intention to exercise an option must be provided at least six months prior to the beginning of an option period. This notice period is to allow the Scheme Financial Vehicle to manage liquidity, consumer passthrough and any hedging activities arising from exercising the option.
Milestones and sunset dates	The LTESA will contain target dates for key project milestones. Where milestones are not achieved by a sunset date, the LTESA would be terminated, and bonding forfeited. Our view is that the LTESA objectives are better achieved by allowing longer sunset dates than have typically been seen in the Australian market. These dates would be adapted for different long duration storage technologies, which may have materially different construction timeframes and risks.
LTESA contracted annuity amount	The annuity amount bid in a competitive tender process. It reflects expected shortfall in net operational revenue from total required revenue to achieve minimum investment hurdles.
LTESA net revenue threshold	A net revenue threshold above which additional provisions apply for the annuity payment and repayment mechanism. It is set in the tender process and reflects the total net revenue required to achieve targeted investment hurdles. The purpose of the LTESA net revenue threshold is to ensure that, where a project has received net payments due to the previous exercise of an option, NSW consumers are repaid these amounts should long duration storage net revenues be materially higher than anticipated.
Escalation	LTES contracted annuity amount and LTESA net revenue threshold are fixed nominal amounts (not escalating).

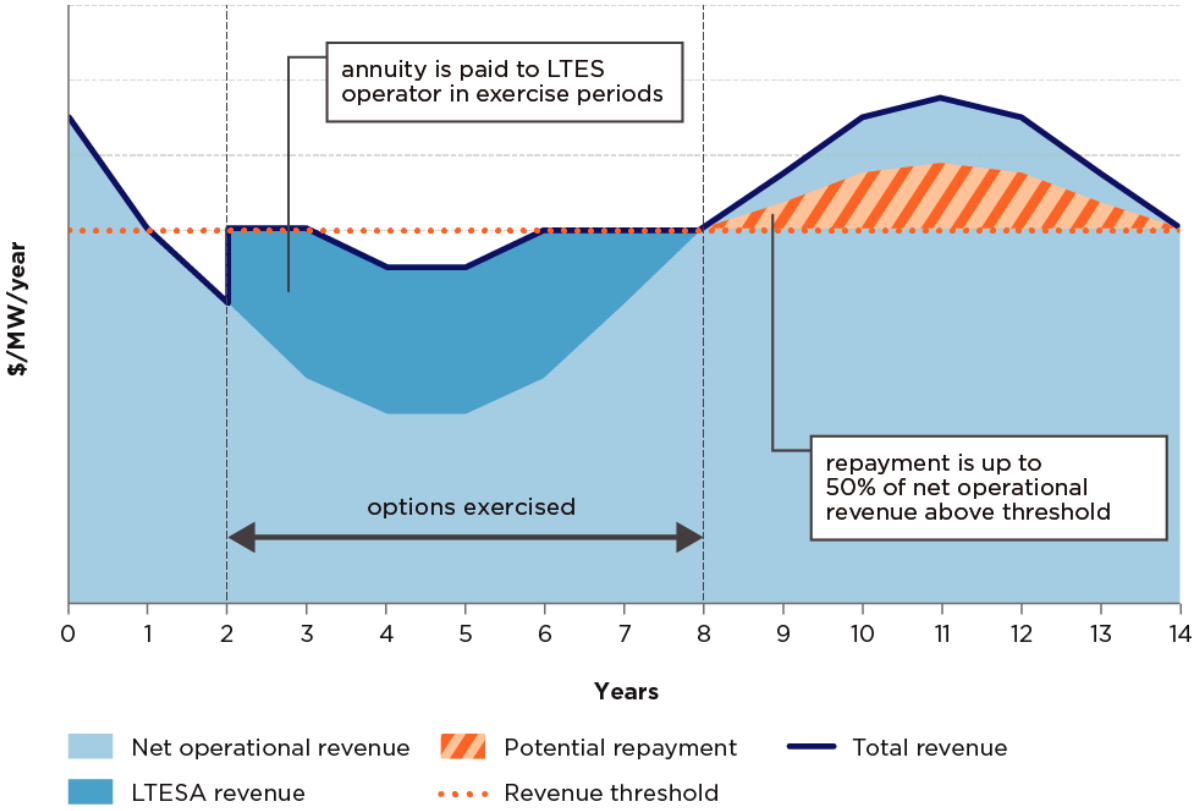
Term	Our design concept for feedback
Financial close price adjustments	The Scheme Financial Vehicle and the LTES operator are expected to share in net cost savings that emerge for projects between the tender and financial close, but it is a one-way mechanism and the parties will not share in net cost increases during that period. These cost reductions are expected to be reflected in a reduction in the LTESA contracted annuity amount. This mechanism is included to allow longer LTESA sunset dates, to recognise the procurement benefits associated with LTESA award, and technology cost reductions (learning rates) occurring in long duration storage technologies.
LTESA annuity payment calculation	The annuity payment is made if the LTES operator's net operational revenue is below its net revenue threshold and is limited such that it equals the lesser of: • LTESA contracted annuity amount (maximum payment), or • LTESA net revenue threshold – net operational revenues. Note: During periods in which the option is put, and the project earns net operational revenues in excess of the net revenue threshold, the project would make payments to the scheme (i.e. the project pays the scheme). So it is understood, when the option is put the scheme take *both* downside *and* upside risk. The annuity payment is subject to the option being exercised and the three conditions that the long duration storage facility: • reasonably operates in a profit-maximising way • is available and operational above a certain percentage of periods outside of reasonable scheduled maintenance. An abatement regime would reduce the annuity for any period where the long duration storage facility was not available • undertakes reasonable maintenance activities to be able to meet the first two conditions.
Repayment mechanism	The repayment applies in all periods where the LTES operator's net operational revenue is above its LTESA net revenue threshold and will be calculated as: **benefit-sharing percentage * (net operational revenue – LTESA net revenue threshold) * contracted capacity** *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator** Net operational revenues are gross revenue generated through the wholesale energy market, ancillary markets, network support, any future emerging markets and any other eligible contracts,[6] minus the cost of energy to generate these revenues. The repayment mechanism has the following features: • LTESA net revenue threshold sets minimum threshold before repayment applies • a standardised benefit-sharing percentage of 50% applies to the repayment calculation up to the maximum recovery • maximum recovery through the repayment mechanism is 100% of historical cumulative net payments from Scheme Financial Vehicle to LTES operator.

[6] An eligible contract is an arm's length contract with a non-related third party that is specifically linked to the output or capacity of the project.

Figure 3 illustrates the potential cash flows of an LTES operator with a long duration storage Annuity Payment Option LTESA. The long duration storage LTESA includes an option to exercise an annuity payment contract and a repayment mechanism with a net revenue threshold and benefit-sharing percentage. In this illustrative example:

- **Up to year 2** – the LTES operator's total revenue is its net operational revenue.
- **Years 2 to 8** – the LTES operator exercises its options and it receives an LTESA annuity payment that supplements its net operational revenue. In some years, such as year 4, the LTES operator receives its full contracted annuity amount. In other years, such as year 7, the LTES operator's annuity payment is reduced such that the sum of the annuity and net operational revenues does not exceed the revenue threshold.
- **From year 8** – the LTES operator does not exercise its options and its total revenue is its net operational revenue. As there is a historical cumulative net payment from the Scheme Financial Vehicle to the LTES operator due to the previous exercise of the options in years 2 to 8, the repayment mechanism applies and equals up to 50% of its net operational revenues above the LTESA revenue threshold.

Figure 3 Long duration storage LTESA illustrative example



Have your say

The Department is actively seeking feedback on LTESA terms and conditions.

Proposed price terms for generation LTESAs and long duration storage LTESAs are outlined Sections 4 and 5.

Key legal terms including the proposed position for both LTESA types are discussed in Section 6: Key legal and project terms.

Questions relating to the LTESA design concepts are in Sections 4 and 5.

Section 2: Context and roles under the Roadmap

Electricity Infrastructure Investment Safeguard

The Safeguard sits at the centre of the Roadmap. It creates an investment signal to deliver generation, long duration storage and firming projects. It provides the framework to offer financial support to eligible projects in the form of LTESAs. This financial support:

- provides long-term revenue certainty for investors and lowers the cost of capital by reducing the risk profile of successful projects
- benefits NSW consumers through lower electricity prices
- is awarded to generation, long duration storage and firming projects that are successful in the competitive tender process.

The Safeguard will achieve its purpose by:

- *establishing an independent Consumer Trustee*
- *introducing LTESAs to reduce risk premium for investors by providing minimum revenue certainty*
- *running competitive tenders to provide the most competitive combination of prices and terms.*

Consumer Trustee

The NSW Minister for Energy and Environment has appointed an independent Consumer Trustee who will be responsible for exercising functions under the EII Act in the long-term financial interests of NSW electricity consumers [7]

The Consumer Trustee will prepare a Development Pathway[8] that sets out the plan to construct generation, long duration storage and firming projects over a 20-year period. To give effect to the Development Pathway, the Consumer Trustee's 10 Year Plan will set out the LTESA tender schedule.

Through a periodic competitive tender process, the Consumer Trustee will recommend an LTESA be awarded to projects that contribute to the construction of equivalent to 12 gigawatts of renewable energy generation capacity and 2 gigawatts of long duration storage capacity by 2030 (in addition to Snowy 2.0). Subject to the requirements set out in the EII Act and regulations, the amount of generation and long duration storage capacity ultimately tendered each year, and the overall timing and terms of the tenders, is a decision for the independent Consumer Trustee.

In connection with the LTESA, the Consumer Trustee will:

- determine the terms and conditions of the LTESA (informed by responses to this paper amongst other things)

[7] The determination of the Development Pathway, the terms of LTESAs, operation, contribution orders and enforcement will always be independent of and not under the control of the NSW Government. In limited circumstances the Minister may terminate the Consumer Trustee's appointment.

[8] A Development Pathway is in some ways analogous to the Australian Energy Market Operator's central planning processes via the Integrated System Plan (ISP) and Energy Statement of Opportunities (ESOO). The Australian Energy Market Operator ISP and ESOO, as well as the Development Pathway, all set out a long-term plan for investment in electricity infrastructure, considering various scenarios and future uncertainty.

- develop a risk management framework to protect the financial interests of NSW customers
- administer competitive tenders to recommend projects for LTESAs
- appoint the Financial Trustee.

The Consumer Trustee will achieve least costs for NSW electricity consumers by:

- maximising LTESA tender competition while making recommendations consistent with the EII Act
- ensuring LTESAs efficiently reduce financial risk to consumers while remaining attractive to investors
- encouraging the private sector to continue to participate in wholesale contracts markets.

Other roles under the Safeguard

Along with the Consumer Trustee, other key entities to be established under the EII Act include the Financial Trustee and the Scheme Financial Vehicle – these entities are not subject to the control or direction of the Minister or NSW Government.

Financial Trustee

Appointed by the Consumer Trustee, the Financial Trustee is the entity that will establish, own and administer the Scheme Financial Vehicle. It will not be a party to LTESAs but will administer them on behalf of the Scheme Financial Vehicle and ensure it is sufficiently funded.

The Financial Trustee will not be liable for any payment obligations under LTESAs. An LTES operator's recourse will be against the Scheme Financial Vehicle.

Scheme Financial Vehicle

The Scheme Financial Vehicle is the counterparty to LTESAs, risk management agreements and responsible for all payment obligations. It can hold property rights, enter commercial contracts, receive and make payments and enforce obligations. All of the Scheme Financial Vehicle's shares are held on trust by the Financial Trustee.

In accordance with the EII Act, the Scheme Financial Vehicle will establish and maintain the Electricity Infrastructure Fund to manage the cash inflows and outflows. It will have a statutory right to receive contributions from distribution network service providers. While the Scheme Financial Vehicle will not have recourse to the State's funds or balance sheet, it is expected to have a sovereign, or near sovereign, credit rating due to its ability to collect contributions from the distribution network service providers (distribution network service providers can pass these contributions on to NSW electricity consumers).

Energy Corporation of NSW

Energy Corporation of NSW is a statutory body established under the *Energy and Utilities Administration Act 1987* and is part of the Department's cluster of government agencies.

In accordance with the EII Act, Energy Corporation of NSW is appointed as the Infrastructure Planner that will lead the coordination and delivery of the five REZs. Energy Corporation of NSW will take a holistic approach to planning and engagement for these REZs. This will ensure the benefits of REZs are fully realised and equitably shared across communities and investors. It will work closely with the Australian Energy Market Operator, network providers, project developers and local communities to develop and recommend REZ network projects that facilitate the optimised delivery of infrastructure.

Energy Corporation of NSW and the Consumer Trustee will work closely together to promote the long-term interests of NSW electricity consumers and foster support from host communities, ensuring the interconnected processes of infrastructure delivery within REZs are integrated and efficient.

Section 3: LTESAs in detail

Long-term energy service agreements (LTESAs) are a central element of the Safeguard mechanism and will offer financial support to eligible generation, long duration storage and firming projects. They will be option contracts to enter into a derivative arrangement that provides successful projects with access to minimum cash flows for their energy service. The LTESA structure is intended to achieve the following objectives:

- incentivise investment in New South Wales by providing a protection mechanism against low wholesale electricity prices
- protect the financial interests of NSW electricity consumers by supporting sufficient (but not excessive) generation, long duration storage and firming projects
- encourage projects' participation in the National Electricity Market and wholesale contracts markets such as Power Purchase Agreements and markets that emerge as a result of the Energy Security Board's post-2025 review process
- achieve an efficient risk allocation between projects and NSW electricity consumers. The outcome of an efficient risk allocation is expected to be investors providing low-cost capital to fund projects
- be highly coordinated with the rollout of REZs and access rights for them. It is anticipated that projects will generally obtain both REZ access rights and LTESAs if they wish to build in a REZ. The intention is that these will be allocated through a single tender process, the aim being to reduce and simplify processes and ensure an integrated experience for investors. LTESAs will be available to projects outside the REZ but must show outstanding merit[9].

LTESA legislative requirements and design principles

In determining the structure of LTESAs, the EII Act specifies requirements that must be followed including consideration of outlined design principles.

Table 1 Legislative requirements and design principles of LTESAs

Legislative requirements	Design principles
• provide for construction and operation of the infrastructure • divide the LTESA into periods of no less than one financial year • give the LTES operator an option to enter into a derivative arrangement • require notice to be given to the Scheme Financial Vehicle of a proposal to exercise an option that is not less than the minimum notice period prescribed by the regulation • provide for the repayment to the Scheme Financial Vehicle of amounts paid because of the exercise of an option in certain circumstances set out in the LTESA	• align the financial incentives with the needs of the electricity system, including as they change • adopt standard National Electricity Market contract conventions • ensure LTESAs allow for future changes in the National Electricity Market • ensure consistency with the risk management framework under the EII Act

[9] The definition of outstanding merit and the assessment methodology are expected to be discussed as part of the consultation on the LTESA tender design.

Types of LTESA

Under the EII Act, the following types of projects are eligible to compete for an LTESA; each type may be suited to a different form of LTESA:

- **generation** projects that involve generation from a renewable energy source and that have a generation capacity of not less than 30 megawatts; to support the construction of generation projects necessary to minimise electricity costs for NSW electricity customers
- **long duration storage** projects for storage of electricity that consist of storage units with a registered capacity that can be dispatched for at least 8 hours, and are scheduled by the Australian Energy Market Operator in the central dispatch process under the National Electricity Rules; to support the construction of long duration storage projects necessary to meet the reliability standard
- **firming** projects that are scheduled by the Australian Energy Market Operator in the central dispatch process under the National Electricity Rules;[10] to support the construction of firming projects necessary to meet the energy security target and the reliability standard.

LTESA option structure

LTESAs are several options (e.g. 10 options) to enter into a fixed length derivative arrangement of not less than one financial year (e.g. 2 years) over a fixed contract length (e.g. 20 years). Further, it is expected that the start date for the LTESA contract term in which options are exercisable would be the planned commissioning date for the project, which must occur before a certain date, subject to adjustments or extensions in certain circumstances.

This has two implications. First, where a project suffers a protracted delay, one or more of its option periods may pass without the options being exercised. Second, if a project elects not to exercise an option over any period of the contract, it would reach the end of the LTESA contract term without exercising all of the options that were available.

LTESA contract structure and cash flows

LTESA contract structure

It is envisaged that a successful LTES operator will enter the following contractual documents:

- **Project Development Agreement**[11] will include the obligations on the LTES operator to achieve financial close, and construct and commission the project. Other than for the survival of residual obligations, the Project Development Agreement will expire on final commissioning of the project
- **Long-term energy service agreement** between the Scheme Financial Vehicle and the LTES operator comprising two components:
    - **master LTESA terms** – standard terms that are intended to apply across all LTESA types
    - **option terms** – the specific terms for the relevant option, which will differ depending on whether the project is generation, long duration storage or firming; for example, in the case of generation, this will set out the terms of the swap.

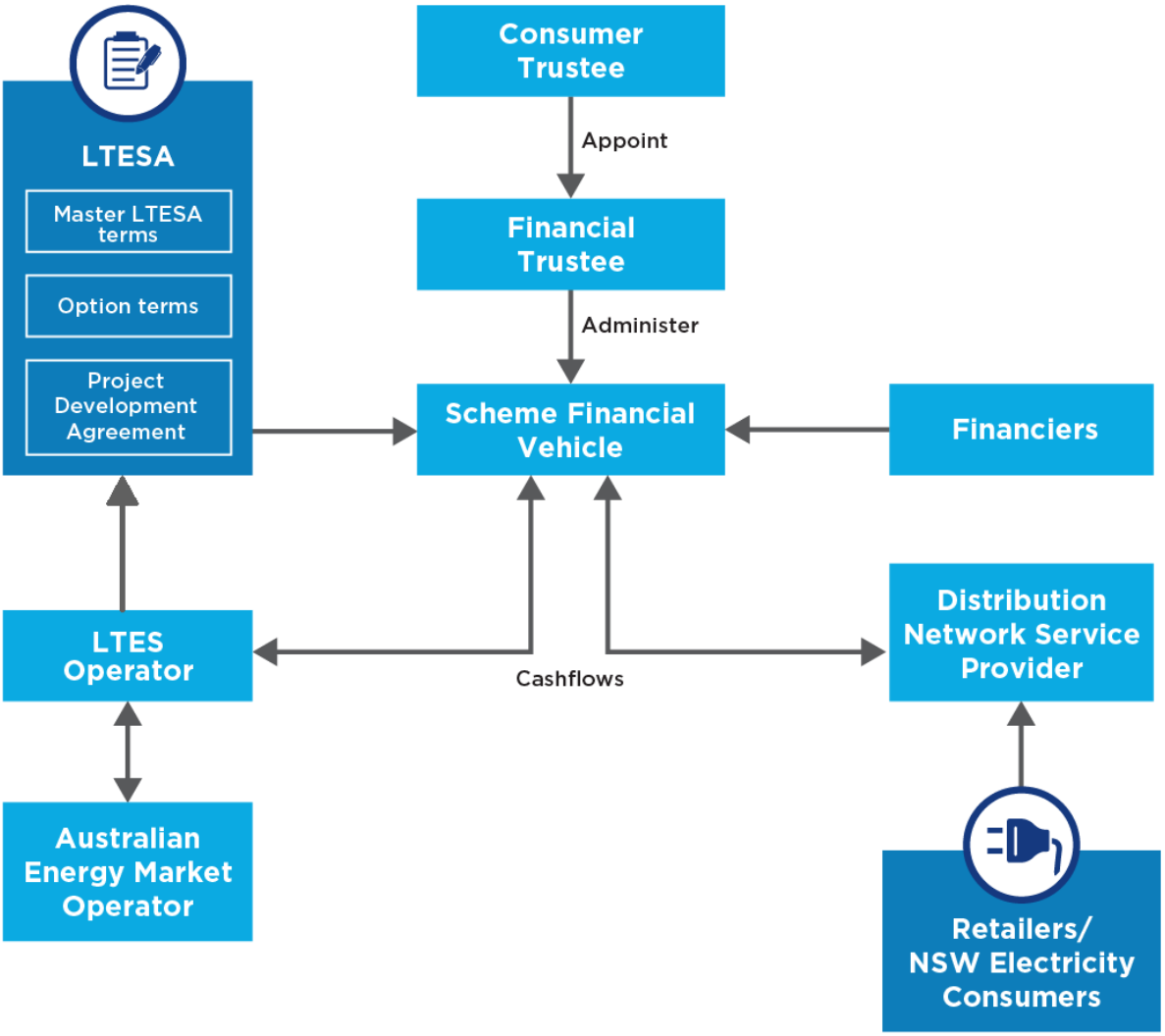
While it is not proposed that the Financial Trustee will be a party to the LTESA, it will administer the LTESA, including settlements, on behalf of the Scheme Financial Vehicle.

[10] In relation to firming, the Energy Security Target Monitor makes a recommendation to the Minister who may then instruct the Consumer Trustee to undertake an LTESA tender process for firming projects.

[11] This decision of the most appropriate Project Development Agreement counterparty remains the subject of ongoing consultation and consideration. Counterparties to the Project Development Agreement could include, for example, the Consumer Trustee, Energy Corporation of NSW or the Scheme Financial Vehicle.

Note: For simplicity, references in this paper to LTESA terms should be assumed to be inclusive of terms that may ultimately fall under the Project Development Agreement.

Figure 4 LTESA contract structure and cash flows



LTESA counterparty cashflows – the Scheme Financial Vehicle

The EII Act mandates that the counterparty to an LTESA is the Scheme Financial Vehicle. While the Financial Trustee may change from time to time, it is not a party to the LTESA. The LTESA cannot be transferred by the Scheme Financial Vehicle to another party.

If an option is exercised, the LTES operator and Scheme Financial Vehicle will make net payments to each other under the LTESA. To enable the Scheme Financial Vehicle to make its required payments (including payments to LTES operators under LTESAs) the Fund will be established under Part 7 of the EII Act. The Fund receives various proceeds related to the Roadmap, including money received from distribution network service providers under annual contribution orders determined by the regulator. It is important to highlight that neither the NSW Government, the Consumer Trustee nor the Financial Trustee will provide guarantees or other credit support to the Scheme Financial Vehicle.

However, there may be a timing difference between when the Scheme Financial Vehicle makes a payment to an LTES operator and when the Scheme Financial Vehicle recovers amounts from distribution network service providers. The State (or a financial institution) may provide a liquidity facility or other support to the Scheme Financial Vehicle on an arm's length basis.

While the Scheme Financial Vehicle will not have recourse to the State's funds or balance sheet, it is expected to have a sovereign or near sovereign credit rating given its funding sources and in particular, the statutory right to receive contribution amounts from the distribution network service providers.

Distribution network service providers are themselves highly rated from a credit perspective. They bill NSW retailers monthly for network charges (that will include the contributions to the Scheme Financial Vehicle) and the retailers bill the customers for those charges. The retailers must pay the distribution network service provider charges even if the underlying NSW customers do not. That is, distribution network service providers do not bear end customer credit risk. The National Electricity Rules also include several protections for distribution network service providers that insulate them should a retailer fail.

Because the Scheme Financial Vehicle is funded by charges to NSW electricity customers, it is independent of government and not subject to budget allocations. The contributions are overseen by the independent regulator with the express legislative requirement to ensure the ongoing funding of the Scheme Financial Vehicle's liabilities and the legislated power to set contributions with no involvement of or approval by government. Any change to the NSW credit rating will not impact the Scheme Financial Vehicle as its source of funding is protected in legislation and independent of government.

This approach has precedent in other electricity schemes; for example, under the National Electricity Rules, several government solar benefit and feed in tariff schemes have been funded as jurisdictional schemes that allow the relevant distribution network service provider to recover the scheme liabilities through distribution charges. Another example is the Australian Capital Territory's renewable energy reverse auction scheme, where successful bidders are paid a feed in tariff entitlement by the Australian Capital Territory electricity distributor. The successful projects that obtained deeds of entitlement under the latter scheme were successfully financed.

LTESA counterparty cashflows – LTES operator

The LTES operator will receive settlements from the Australian Energy Market Operator in respect of its generation or output that will fund any derivative payments to the Scheme Financial Vehicle required under the LTESA if an option is exercised. It will also receive revenues from any market Power Purchase Agreements or other contracts it enters into. The LTES operator may be required to make repayments to the Scheme Financial Vehicle subject to the conditions of the repayment mechanism and there being a historical cumulative net payment from the Scheme Financial Vehicle to the LTES operator.

It is expected that most LTES operators will be project financed and may have concerns around having insufficient cash flows to meet their repayment obligations. These obligations include debt repayments, operational expenditure and accruals for replacement capital expenditure during the terms of an LTESA. The intention is to avoid complicated cash flow 'waterfall' arrangements with LTES operators. This may require open book arrangements or a form of second ranking security in relation to accrued amounts. The proposed repayment structures consider features to mitigate the risks of repayment leading to the LTES operator having insufficient funds to meet its usual financial obligations.

Tendering for LTESAs

LTESAs will generally be offered through a competitive tender process, which will be designed to ensure the objectives of the EII Act and the Safeguard are met.

A key role of the Consumer Trustee is to administer the tender and determine the best combination of projects, and their corresponding price and legal LTESA terms to optimise cost and risk outcomes for NSW consumers.

It is acknowledged the following matters are important to scheme design and they will be addressed in future consultation materials:

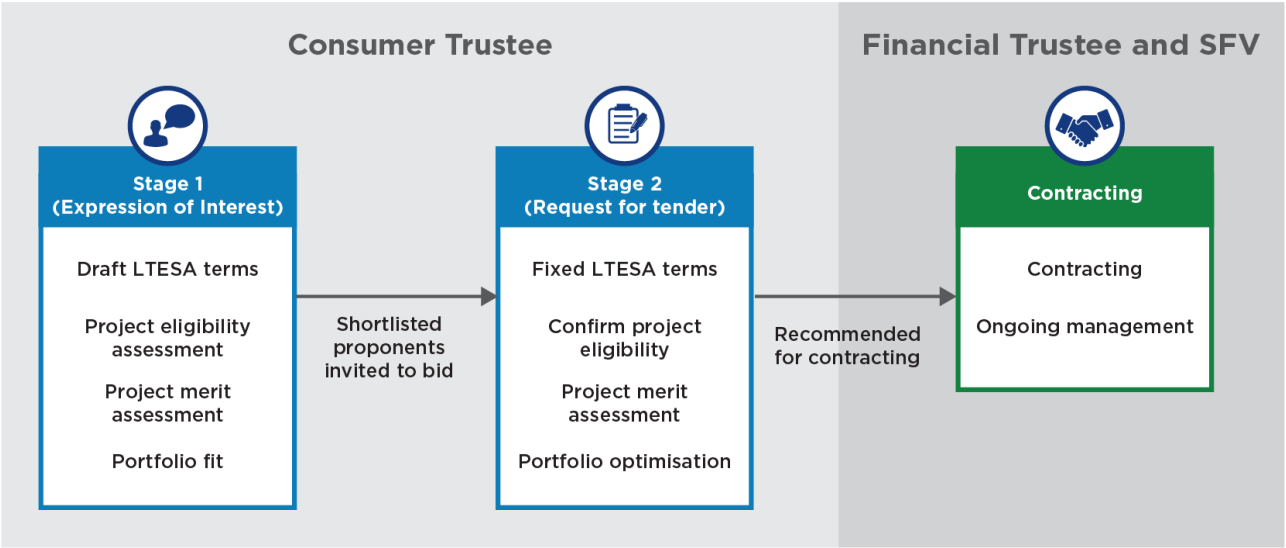
- REZ access rights
- the interaction between the allocation of the LTESA and REZ access rights,
- the ways in which the Consumer Trustee and Energy Corporation of NSW will work together to allocate LTESA and REZ access rights.

Indicative competitive LTESA tender process

At this stage, it is proposed that all projects in New South Wales, irrespective of location, will be eligible to compete for LTESAs. LTESAs for generation projects will be available to projects within REZs and available to generation projects outside of REZs if they show 'outstanding merit'. The definition of 'outstanding merit' and the assessment methodology are not in scope for this paper, but are expected to be discussed as part of the consultation process on tender design. Tenders for long duration storage and firming LTESAs will be 'location neutral'.

Figure 5 and the summary that follows outline a possible process for the first tender round. This indicative process only contemplates LTESA allocation.

Figure 5 Indicative first tender process for generation LTESAs[12]



Summary

1. **Stage 1 (Expression of interest**) – Bidders will be assessed against a set of eligibility and merit criteria that will be developed by the Consumer Trustee. This evaluation will involve the Consumer Trustee making decisions in conjunction with the Energy Corporation of NSW. Prospective bidders will be provided with a draft term sheet covering the key terms and conditions of the LTESA and asked to nominate multiple price terms. An eligibility and merit assessment (including price) will be conducted, resulting in a shortlist.

[12] The tender process discussed is indicative only and does not form part of this consultation exercise. Subject to further regulation being implemented, the Consumer Trustee may have scope in managing condition precedents of LTESAs until the commercial operation date.

2. **Stage 2 (Request for tender)** – Shortlisted bidders will progress to the tender stage, which will involve a formal request for tender. Here, bidders will be asked to nominate multiple price terms as part of each bid. For example, the proponent could have the flexibility to provide multiple fixed prices as shown in Table 2. Submissions will be assessed on eligibility, including a portfolio assessment.[13]
3. **Recommendation/LTESA award** – The Financial Trustee will award contracts for the Scheme Financial Vehicle to enter into based on the recommendations of the Consumer Trustee.

During a tender each prospective LTES operator must submit a default bid with terms conforming to all the design concept quantities. The terms of a default bid are currently the subject of consultation. The 'proposed positions' and design concept discussed in this paper reflect the current proposal for the default bid. Consideration is being given to a prospective LTES operator submitting one or more alternative bids in addition to their default bid. Here, a bidder may choose to submit a bid with terms that depart from the default bid (see the example of alternative bids in Table 2). The Consumer Trustee may consider alternative bids at its discretion. If it is assessed to be in the best interest of consumers, it may select an alternative bid as the preferred bid. An example of an 'alternative bid' is a shorter proposed contract term than the default bid. All other things being equal, a shorter contract term could be considered preferable if it reduces the financial risk to NSW electricity consumers.

Table 2 Potential bid with selected terms shown for a generation LTESA – Stages 1 or 2

<table>
<tr><th colspan="2">LTESA biddable terms</th><th>Default bid</th><th colspan="2">Alternative bid</th></tr>
<tr><td rowspan="6">Flexible terms</td><td>Contract term</td><td>20 years</td><td>10 years</td><td>15 years</td></tr>
<tr><td>Contractual shape</td><td>Fixed shape and fixed volume</td><td>Fixed shape and fixed volume</td><td>Generation following</td></tr>
<tr><td>Green rights and other products</td><td>Bundled</td><td>Bundled</td><td>Electricity only</td></tr>
<tr><td>Negative pricing</td><td>Zero price floor</td><td>Zero price floor</td><td>Tiered approach</td></tr>
<tr><td>Escalation</td><td>Fixed nominal</td><td>Stepped pricing[14]</td><td>Escalating at CPI</td></tr>
<tr><td rowspan="2">Price bids</td><td>Fixed price</td><td rowspan="2">Primary bid</td><td rowspan="2">Alternative bid 1</td><td rowspan="2">Alternative bid 2</td></tr>
<tr><td>Repayment threshold price</td></tr>
</table>

The intent of allowing alternative bids is to encourage innovation in project design and commercial risk allocation. Projects that can deliver better consumer outcomes through alternative contract structures ought to have their bids considered. However, to ensure the integrity of the tender process, proponents must provide a conforming default bid and the default bid is expected to be the primary basis for project assessment and selection.

[13] This stage may include the Project Development Agreement and REZ access rights as part of the evaluation and assessment of a bid.

[14] The proponent nominates a profile of fixed prices for each option period in real dollars. For example, the fixed price could step up or down over time or have some other profile. Parties may wish to do this based on their discount rates or because they already have Power Purchase Agreements for certain periods.

The tender documentation will request information on sponsors and projects required for assessment. For generation LTESAs, this includes:

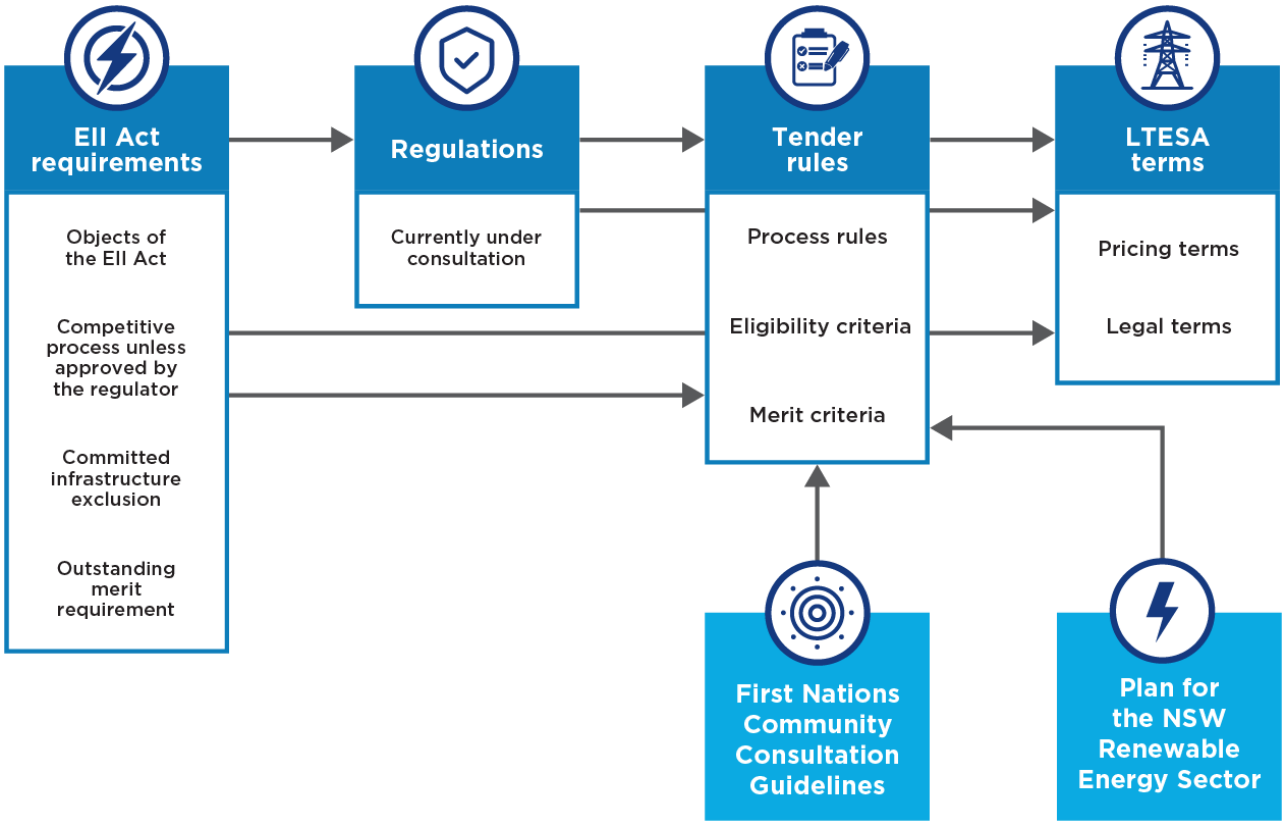
- prices for the fixed price and the repayment threshold price as $/MWh values
- contractual shape – an hourly profile for fixed shape and a proposed gigawatt hours per annum volume obligation.

For long duration storage LTESAs, the bid prices for the long duration storage default bid under the Annuity Payment Option are the contracted annuity amount and the net revenue threshold. Similar to the generation default bid, prospective long duration storage LTES operators may submit one or more alternative bids where terms such as the length of the contract term depart from the default bid.

Guiding principles for LTESAs during tenders

The final LTESA structure will conform to legislation, tender rules, and price and legal terms; negotiated and agreed between the Consumer Trustee and individual projects. The development and construction components of LTESAs will also incorporate requirements relating to consultation and negotiation with local First Nations communities, and the Plan for the NSW Renewable Energy Sector, including how to promote local and First Nations employment and local content. The Consumer Trustee will decide how LTESAs are structured to ensure these requirements are managed effectively.

Figure 6 Relationship between the legislation, regulations, tender rules and LTESA structure



Section 4: Price terms for generation LTESAs

A generation LTESA is designed to assist in the financing of renewable electricity generation projects of greater than 30 megawatts in New South Wales. Generation LTESAs must adhere to the minimum legislative requirements and design principles.

A generation LTESA will be a series of options granting the LTES operator the right, but not an obligation, to exercise a swap arrangement. The LTES operator will have the flexibility of having multiple opportunities to exercise its options periodically across the LTESA term. Each option will have an associated option period of one financial year at a minimum.

A generation LTESA will also include a repayment mechanism for the Scheme Financial Vehicle to recoup net amounts paid to the LTES operator due to an option being exercised should net revenues be materially higher than anticipated. The Department is considering proposals that reduce or remove the repayment obligation where the LTES operator has an eligible wholesale market contract. This repayment mechanism aims to incentivise participation in wholesale market contracts to support contract market liquidity.

Generation LTESA design characteristics:

- should incentivise LTES operators to maximise market revenues
- there will not be any cash flows between the LTES operator and the Scheme Financial Vehicle until an option has been exercised
- repayment should not exceed the historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator that occur due to the previous exercise of LTESA options
- repayments will only be due in periods when the option is not exercised
- LTES operators will not be required to repay the Scheme Financial Vehicle any amount that would lead to their total net revenues per unit of output (wholesale market revenue net of repayment amount) being less than the LTESA fixed price
- no repayments will apply in any situation where the LTES operator's dispatch-weighted average price is below the fixed LTESA price
- repayment obligation could be reduced or removed where the LTES operator has an eligible wholesale market contract.

The following subsections detail the: underlying cash settled swap; contractual shape/volume; option design; repayment mechanism; and negative price provisions.

Have your say

The Department is seeking your views on the overall generation LTESA design concepts.

Questions relating to the generation LTESA are in the Have your say box at the end of this section.

Cash settled swap

The underlying instrument for the generation LTESA is a swap contract between the LTES operator and the Scheme Financial Vehicle referencing the wholesale electricity spot price at the NSW Regional Reference Node. In this way, marginal loss factor risk is expected to be managed by the LTES operator. It is noted that locational price risks may be different for projects with a REZ access right and those without a REZ access right, and the REZ access right is not within the scope of this consultation.

When enlivened, the swap contact allows the LTES operator to earn a fixed price for its electricity generation as contracted in its LTESA. Under the terms of the swap, the LTES operator (the seller) receives a payment from the Scheme Financial Vehicle (the buyer) when the spot price is below

the ‘fixed price’ defined in the swap contract. Conversely, the LTES operator makes payments to the Scheme Financial Vehicle when the spot price is above the same fixed price. The LTES operator earns the same price in either scenario through the net of its spot market and swap contract revenues.

The LTESA fixed price is bid in the tender process and is intended to represent the minimum price the LTES operator needs for its expected generation volume to meet its debt service covenants.

The swap is ‘cash settled’, meaning no transfer of ownership of energy occurs – the LTES operator remains responsible for (and receives the revenue from) selling its generation into the National Electricity Market pool.

Contractual shape and volume

The following potential contract shape and volume have been identified for generation LTESAs:

- **Fixed volume** specifies a minimum generation volume obligation over a defined period.
- **Fixed shape** specifies that swap payments are based on a predefined hourly profile rather than the actual dispatch of an LTES operator. The fixed shape profile may be tailored to suit each LTES operator and may include seasonal and/or long-term adjustments, such as for annual plant degradation.
- **Generation following** specifies that the swap payments are based on the LTES operator’s actual dispatch into the market.

Our design concept proposes a fixed shape and fixed volume basis for the swap.

There are several reasons for this proposed position. Principally, the risks relating to variable production can either be allocated to the individual projects receiving an LTESA or allocated to the Scheme Financial Vehicle (which will manage shape and volume risks on behalf of consumers). Because the Roadmap could eventually support the vast majority of electricity infrastructure in the state to be developed in the coming decades, the Consumer Trustee needs to be able to value the energy produced by generation and to effectively provide liquidity to the contract market if a substantial volume of LTESAs are put. Because the value of energy and demand varies based on the time of the day, this is more readily possible with fixed volume, fixed shape contracts. Stakeholders who prefer a generation following contract need to address these issues directly; the NSW Government will not support a generation following contract unless these issues can be resolved.

The Department’s perspective is that NSW electricity consumers would benefit where renewable energy projects are able to manage their shape and volume risk. This is expected to provide the following benefits:

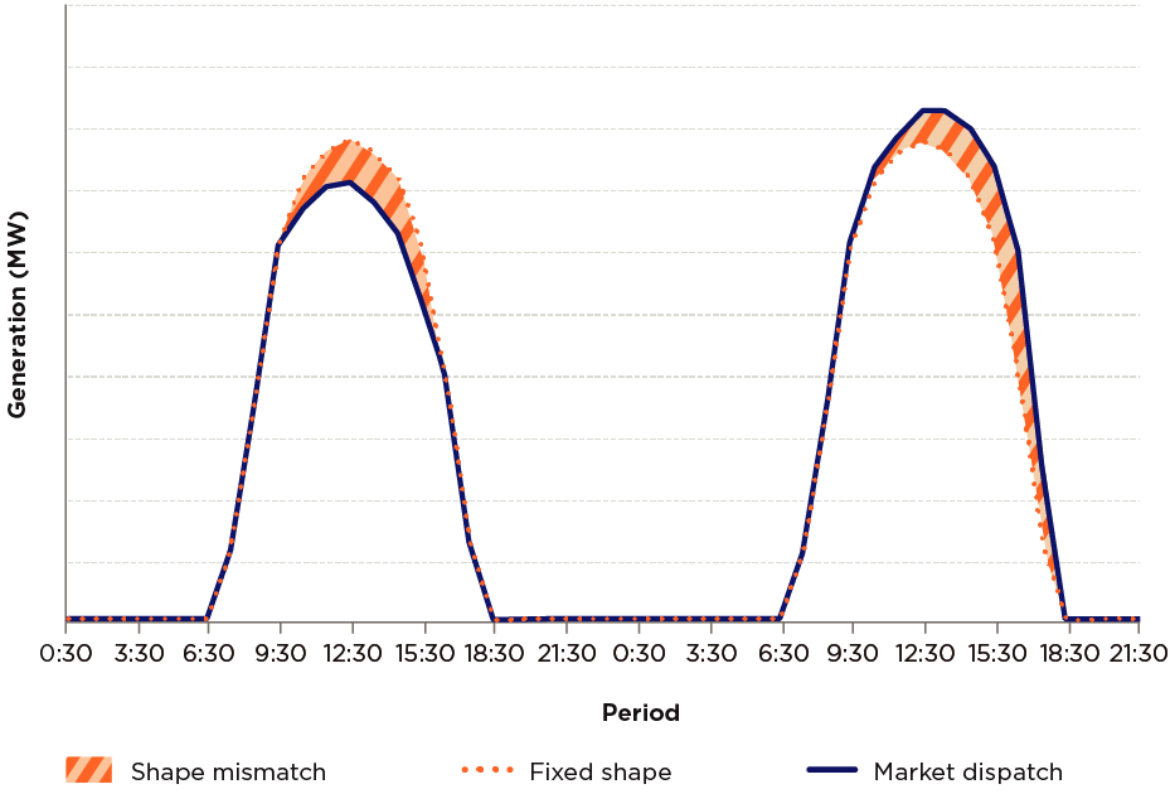
- retaining some of an LTES operator’s exposure to spot prices, so it continues to be incentivised to build and operate in response to price signals and meet the changing needs of the electricity system
- simplifying the merit assessment of bids and supporting the Consumer Trustee’s capacity to value the energy provided by the project, not merely assess its cost
- as a ‘financially firm’ contract, allowing the Scheme Financial Vehicle’s position to be hedged with greater certainty and simplifying the Scheme Financial Vehicle’s ability to sell any exercised LTESA options to energy retailers or large energy consumers to improve liquidity in the contracts market and manage consumer risk
- encouraging dynamic technology and commercial innovation to manage generation risk at the individual project level
- more efficient allocation of access rights and use of REZ network infrastructure.

Conversely, there are limitations on the ability of renewable energy projects to take shape and volume risk in the National Electricity Market. These limitations include:

- increasing capital and operating costs for LTES operators, as they may manage this risk by overbuilding renewable capacity or entering firming contracts to defend the fixed shape, thereby increasing liability on the Scheme Financial Vehicle
- shape and volume risks may be better managed in aggregate across a portfolio due to increased generation profile diversity and efficiencies of centrally planned firming capacity
- increasing risk of projects defaulting on their obligations (e.g. debt, LTESA), driven by LTES operators being required to take additional risk of shape and volume.

Figure 7 illustrates an LTES operator's market dispatch profile compared with an example contracted fixed shape. Where there is mismatch between a generator's market dispatch and its contracted fixed shape (the shaded area), the generator receives the spot price for generation in excess of its contracted shape or pays the Scheme Financial Vehicle the spot price for generation below the contracted shape.

Figure 7 LTES operator market dispatch compared with LTESA contracted fixed shape across two days



Options to enter into swaps

The generation LTESAs are designed to be a series of options giving the LTES operator the right to enter a swap contract in each option period. The LTES operator has the flexibility to exercise or not exercise each, subject to the proposed six-month notice period.

While long duration storage LTESAs also have options, their option period and notice period may differ from generation LTESAs.

Option period

The option period is the period of the swap once an option has been exercised. They are fixed periods defined in the LTESA and may be any length but no less than one financial year. Once a decision to exercise the option is made, the LTES operator will not be able to reverse their position

until the current option period ends. The proposed position is that the option period be a standardised value of two financial years for all generation LTESAs.

There were three primary factors when considering the option period:

- The shorter the duration of the option period, the greater the flexibility for projects to contract in the wholesale market.
- To maximise participation in the wholesale contracts market, option periods should be aligned with the duration of wholesale contracts. For example, research by the Australian Competition and Consumer Commission identified that standalone retailers hedged only one to two years ahead[15]. Option periods of longer duration could help lengthen the number of years ahead that retailers hedge but may limit projects' access to the existing markets.
- There are incremental risks and administrative complexity for the Scheme Financial Vehicle when managing shorter option periods. The administrative complexity will add to consumer costs and incremental risks will occur should the Scheme Financial Vehicle seek to undertake hedging activities.

The Department supports and may consider adaptions of the contract term, option period and exercise requirements if they can deliver better outcomes for consumers and LTES operators. These could include, for example, introducing a mandatory maturity period to qualify for exercising the first option (i.e. a forward starting LTESA), which would avoid any LTESA payments in the front-end of the term, or a contract term that is longer than the sum of all the option periods.

Notice period

The notice period is the defined minimum time the LTES operator must give for their intention to exercise in the next option period. The proposed notice period is six months. It should be noted that the Consumer Trustee may prefer longer notice periods to increase certainty with planning and the Scheme Financial Vehicle's cash flow management.

Repayment mechanism

Under the EII Act, LTESAs must include a mechanism that allows the Scheme Financial Vehicle to recoup some of its previous payments from the exercise of the LTESA. This is incorporated as benefit-sharing of revenues above the repayment threshold price, referred to as the repayment mechanism.

The repayment mechanism will only apply in non-exercise periods and if the LTES operator's dispatch-weighted average price is above its LTESA repayment threshold price. The repayment is calculated as:

benefit-sharing percentage * (DWAP – repayment threshold price) * dispatched energy generation *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator**

The repayment calculation intends to capture profits made above the repayment threshold price. A standardised benefit-sharing percentage of 75% is proposed to apply to the repayment calculations to encourage profit-maximising behaviour.

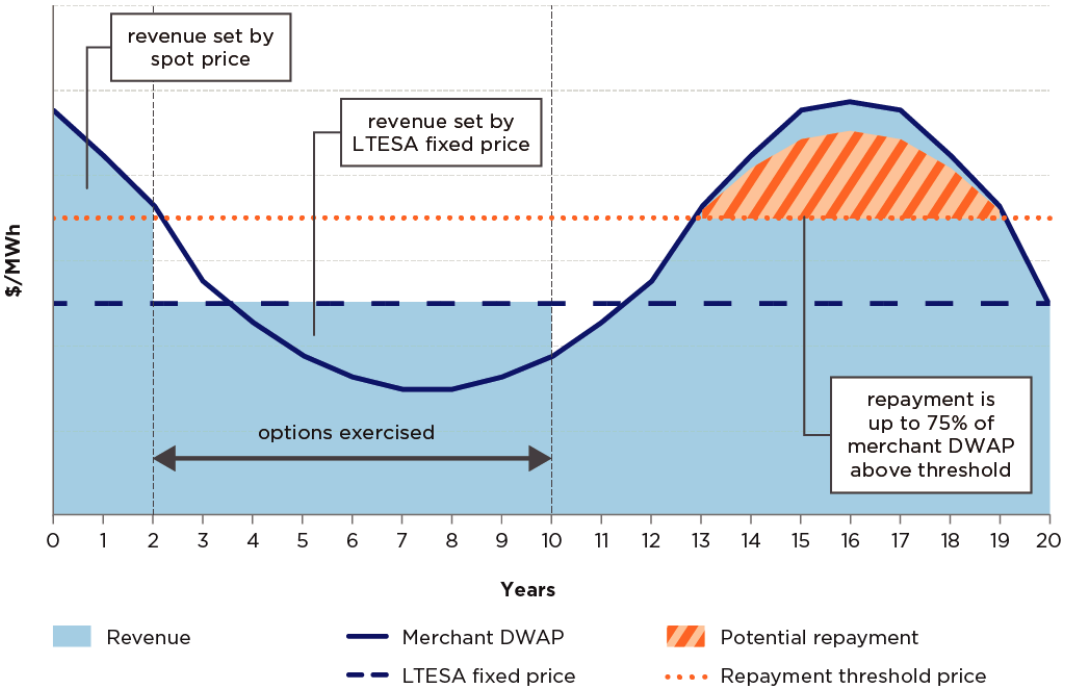
Additionally, the Department is aware that the LTESA repayment mechanism needs to not interfere with obligations an LTES operator has under its wholesale market contracts (e.g. Power Purchase Agreement) and we would like to receive suggestions from the market on how a repayment mechanism can work where projects have also entered into a long-term contract.

[15] See Figure 5.1: Representative average net position of a stand-alone retailer, Q1 2018 to Q4 2019, ACCC Retail Electricity Pricing Enquiry – Final Report (PDF 9.2MB), June 2018.

One mechanism under consideration is to adjust the repayment where a project has a wholesale markets contract. For example, if an LTES operator enters an eligible wholesale market contract[16], its repayment amount in a non-exercise period will cease or reduce. The reduction in repayment will be in line with the Power Purchase Agreement's payment obligations. This structure, and similar alternatives, are aimed at limiting interference with Power Purchase Agreement cash flows and encouraging participation in the wholesale contracts market.

An example of the repayment calculation is shown in Figure 8. In this example the LTES operator did not enter an eligible wholesale market contract. Had the LTES operator entered an eligible wholesale market contract, an exemption to repayment might apply to the extent of that contract.

Figure 8 Simplified revenues for an LTES operator with merchant exposure and an LTESA



Cap on amounts recoverable by the Scheme Financial Vehicle

To expand on the formula described above, the repayment mechanism is designed to allow the Scheme Financial Vehicle to recoup previous payments due to the exercise of an option, so the maximum repayment amount is limited to the historical cumulative net payment balance from the Scheme Financial Vehicle to the LTES operator. Any repayment obligations in non-exercise periods cease where there is no longer a cumulative net payment from the Scheme Financial Vehicle to the LTES operator, including where this occurs partway through a non-exercise period. The LTES operator retains any upside profits beyond this amount until it exercises an additional option and there are historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator.

Calculation of the repayment mechanism

In exercise periods, the LTES operator receives the fixed price for its generation contracted under its LTESA. In non-exercise periods, the LTES operator may benefit from high spot prices and achieve a dispatch-weighted average price higher than the LTESA fixed price, which makes it

[16] An eligible wholesale market contract is a contract that is specifically linked to the output or capacity of the project and has the effect of transferring wholesale price risk from the LTES operator to the contract buyer. The LTES operator is excused only to the extent the eligible wholesale market contract relates to the project. Consideration is being given to related-party contracts and exemptions for vertically integrated businesses.

practical to apply the repayment mechanism during non-exercise periods only. If the dispatch-weighted average price in a non-exercise period is below the repayment threshold price, no repayment is due.

Project financing and the repayment mechanism

It is recognised that the repayment mechanism needs to operate within the constraints of project finance. It is intended that the repayment threshold price will provide projects with sufficient cash flow for the LTES operator to meet its debt service and operating expense requirements in any period. For example, projects may bid an LTESA fixed price equal to debt service requirements and a repayment threshold price equal to debt service and an equity return.

Projects and project financiers should structure financing arrangements to ensure sufficient cash reserves are maintained in the project during the dispatch-weighted average price calculation period. Further, it is expected the Scheme Financial Vehicle's contractual claim to the repayment will be unsecured, however, a failure to make a repayment by a project would likely amount to a default event under the LTESA.

Repayment threshold price

The repayment threshold price allows an LTES operator to set a minimum dispatch-weighted average price limit before any repayment applies. The repayment threshold price is a secondary fixed price that proponents would competitively bid, in addition to the LTESA fixed price.

An LTES operator can bid the repayment threshold price to reflect a level at which the project will recover its expected debt service obligations, operating expenses, capital expenditures and reasonable equity returns.

Benefit-sharing percentage

Consideration is being given to the inclusion of a fixed percentage (less than 100%) provision, to reduce the notional repayment amount in the repayment mechanism and encourage profit-maximising behaviour (for example, optimising scheduled maintenance). The starting position for the benefit-sharing percentage is 75%.

Shape and volume basis for repayment mechanism

For generation following contracts, the repayment amounts will be calculated using the LTES operator's dispatched generation for the volume-basis. It is recognised that under fixed shape contracts utilising the fixed shape to calculate the repayment amount in non-exercise periods may put LTES operators at risk of repaying the Scheme Financial Vehicle amounts that were not physically achieved in the market. Therefore, it is proposed the repayment calculation be based on the LTES operator's dispatched generation rather than the notional contractual shape of the LTESA option.

Negative price provisions

A 'zero price floor' is proposed for the swap contract to encourage LTES operators to respond appropriately to price signals and to meet the changing needs of the electricity system. Under this approach, the minimum National Electricity Market wholesale price will be set at zero when swap payments are calculated.

Persistent negative pricing is generally regarded as sub-optimal and the benefits of negative pricing do not necessarily flow through to consumers. Despite this, it is recognised that negative pricing poses a significant risk to energy projects and the Consumer Trustee may consider alternative risk-sharing where this delivers net benefits to consumers.

Have your say

The Department welcomes your feedback on risk-sharing approaches to negative pricing, including alternative approaches to treating negative pricing. One alternative approach is outlined below.

Alternative approaches to negative pricing

Consideration is also being given to other options for managing negative price risks. One example is a two-tiered mechanism where:

1. The swap will not require any payments from the Scheme Financial Vehicle to the LTES operator for trading intervals when the spot price is negative, up to a contractually defined level of negative trading intervals each quarter. That is, the Scheme Financial Vehicle will not pay the fixed price during those periods along with not paying the absolute value of any negative prices. The expectation is that the project will not generate during negative price periods.
2. Once the defined level of negative price trading intervals is reached, the Scheme Financial Vehicle will pay the fixed price for the notional quantity for any additional negative price trading intervals but will not pay the absolute value of any negative prices.

In this mechanism, for a generation following LTESA, any minimum generation obligation will be reduced for negative price periods.

Have your say

1. How effective is the proposed generation LTESA design in meeting the intended objectives?
    a. What are your views on the overall generation LTESA **design concept**?
2. Beyond those mentioned in this paper, are there other major considerations that should be factored into the design concepts?
3. We are seeking feedback on how **risk has been allocated** within the generation LTESA design concept. How can the risk allocation be optimised to meet the design objectives?
4. How can we reduce the complexity of the design without significantly altering a project's cost of capital or bid prices?
5. The generation LTESA design is intended to support participation in the contracts market. Are any of the proposed design terms likely to interfere with participation in the contracts market? Which terms are most likely to enhance participation?
6. Our intention is for the LTESA **fixed price** to cover debt service covenants, and the repayment threshold price to be set around a reasonable equity return.
    a. What factors will be considered in formulating a bid?
    b. What are the benefits of allowing bidders to nominate a profile of fixed prices for each option period compared with a single nominal fixed price across the LTESA term?

7. What are the key cashflow concerns for projects under the generation LTESA design? Has the LTESA design alleviated other cashflow concerns that may exist for projects without a LTESA?
8. We would like your feedback on the generation LTESA **repayment mechanisms**.
    a. How will the proposed repayment mechanism affect the fixed price and repayment threshold price in tender bids?
    b. Are there any issues with the repayment design that might impact a project's operating or contracting strategy?
9. The Department's reasoning for proposing **fixed shape fixed volume contracts** is that projects are best placed to manage their shape and volume risk, as outlined in Section 4.
    a. How will the proposed risk-sharing approach impact projects' risk position (including the credit risk of your projects)?
    b. How will the proposed risk-sharing approach impact projects' LTESA fixed price and cost of capital?
    c. The Department will consider other risk-sharing arrangements if these arrangements can address the matters outlined in Section 4. If proposing an alternative approach, please address these in your response.
10. We are seeking feedback on projects' decision-making for exercising their generation LTESA options.
    a. What are the key factors that will influence the decision to exercise an option?
    b. Would a project operate differently if it has exercised an option?
    c. How would exercising an option affect the contracting strategy of a project? Will projects sign a Power Purchase Agreement during an exercise period?

Section 5: Price terms for long duration storage LTESAs

Market context of long duration storage and firming facilities

Long duration storage facilities

The market context for long duration storage is fundamentally different to that for generation. For example:

- While the price signal for generation is well established, markets and price signals for long duration storage are either established, emerging or theoretical.[17]
- National regulation will play an important role in defining these markets.[18] It is an objective of the Roadmap that national approaches be supported wherever possible and that long duration storage projects in New South Wales participate in these markets.
- Many long duration storage technologies are relatively new, and a range of possible services are being demonstrated (for example, synthetic inertia). New services and sources of revenue will emerge and are unforeseeable.
- Potentially lowest-cost long duration storage technologies have longer construction lead times, higher development costs and risks, and may require novel contract structures.

It is expected long duration storage proponents will operate in wholesale energy arbitrage and across other markets and services in a way that aligns with their technical characteristics. The structure of the long duration storage LTESA should be tailored, as much as possible, to encourage profit-maximisation by long duration storage facilities across these markets and services.

Firming facilities

It is expected that firming LTES operators will earn revenue primarily through the wholesale energy market and participate in other markets and services suited to their technical capabilities. These services may overlap with markets in which long duration storage facilities operate.

While long duration storage and firming projects may provide similar services, the difference in eligibility criteria dictate that certain technologies eligible for a firming LTESA may be ineligible for the long duration storage LTESA, and vice-versa. The design of the firming LTESA will consider similar revenue streams for both types and use the long duration storage LTESA learnings to inform its design. It is acknowledged that other designs may be more appropriate for the firming LTESA, such as an option to enter a cap contract.

Long duration storage LTESA at a glance

The long duration storage LTESA is designed to financially support long duration storage facilities of greater than 30 megawatts in New South Wales. The EII Act defines long duration storage as consisting of storage units with a registered capacity that can be dispatched for at least 8 hours and are scheduled by the Australian Energy Market Operator in the central dispatch process under the National Electricity Rules.

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[17] Examples: Frequency Control Ancillary Services (FCAS) – established; load shifting – emerging; grid augmentation – theoretical.

[18] For example, resource adequacy and essential system services reforms proposed under the Energy Security Board post-2025 reforms.

The long duration storage LTESA will be a series of options granting the LTES operator the right, but not an obligation, to receive a minimum payment for the services it provides. The Roadmap released preliminary details of a potential long duration storage LTESA structure:

> *… projects will likely be structured to include a minimum availability payment for the contract term. Conditions will be prescribed in the procurement documentation that must be met for the Availability Payment to be made, including operating according to agreed procedures which maximise project revenue and therefore value to consumers.*[19]

Our design concept for the long duration storage LTESA structure is an Annuity Payment Option, which builds on the preliminary details from the Roadmap. The two other structures being considered for the underlying contract are Virtual Storage Option and Super Peak Option. The structures are expected to have a number of common terms and conditions with the generation LTESA such as option periods and notice periods (see Section 4: Price terms for generation LTESAs).

Each structure includes a repayment mechanism, although different repayment formulations apply. The mechanism enables the Scheme Financial Vehicle to claim back historic payments made to the LTES operator due to the previous exercise of options. The design of the repayment mechanism intends to encourage profit-maximising behaviour to achieve the policy intent of minimising consumer costs.

Have your say

The Department is seeking your views on the objectives of the potential long duration storage LTESA and firming structures.

Questions relating to the long duration storage and firming LTESAs are in the Have your say box at the end of this section. Further consultation on the firming LTESA may be considered in the future.

Potential long duration storage LTESA structures

The three potential long duration storage LTESA structures are outlined in Table 3. The impact of each structure on project cash flows should be considered against a counterfactual of merchant-only net revenues.

Table 3 Potential long duration storage LTESA structures

Long duration storage LTESA structure	Outcome if option exercised
Annuity Payment Option	LTES operator receives an annuity payment to top up net operational revenues achieved by the project, up to a threshold net revenue amount. Above the threshold amount, net operational revenues are expected to be shared between the Scheme Financial Vehicle and the LTES operator.

[19] NSW Electricity Infrastructure Roadmap Detailed Report (PDF 6.9MB), November 2020.

Long duration storage LTESA structure	Outcome if option exercised
Virtual Storage Option	LTES operator receives an agreed wholesale price spread by entering a swap on the spread of spot prices across defined periods.
Super Peak Option	LTES operator receives an agreed price for wholesale market dispatch during agreed 'super peak' hours in a day.

Annuity Payment Option

Design characteristics

Under the Annuity Payment Option, an LTES operator will receive an annual annuity payment when it exercises the LTESA option. The structure does not prescribe any operational strategies, allowing the LTES operator to respond to existing market signals and participate in emerging markets.

This structure specifies a contracted annuity amount and a net revenue threshold, both of which are set through a competitive tender process. The contracted annuity amount sets the maximum annuity payment if the option is exercised, and the revenue threshold sets the minimum net operational revenue before the repayment mechanism applies.

Net operational revenue	Intended to cover all revenue streams for the long duration storage facility. This would include gross revenue generated through the wholesale energy market, ancillary markets, network support, any future emerging markets and any other eligible contracts,[20] minus the cost of purchasing energy to generate these revenues.

Conceptually, the contracted annuity amount should reflect the shortfall of expected market net revenue from the minimum net revenue required to meet investment hurdles. The maximum annuity payment in any period is fixed at a contractual amount agreed in the tender process. The annuity payment is reduced from the contracted annuity amount as the LTES operator's net operational revenues approach the net revenue threshold. No annuity payment will be made to the LTES operator if its net operational revenue exceeds the threshold. Therefore, the actual annuity payment made from the Scheme Financial Vehicle to the LTES operator is limited so that it equals the lesser of:

- LTESA contracted annuity amount, or
- LTESA net revenue threshold – net operational revenues.

To ensure optimal outcomes for consumers, the annuity payment is subject to the long duration storage facility being available above a certain percentage of the time. Where the long duration storage facility does not meet the availability requirement, an abatement or penalty regime will apply.

Repayment mechanism

The Annuity Payment Option retains the incentive for an LTES operator to profit-maximise as the LTES operator may achieve net operational revenues that exceed its LTESA net revenue threshold

[20] An eligible contract is an arm's length contract with a non-related third party that is specifically linked to the output or capacity of the project.

during both exercise and non-exercise periods. Hence, under this structure, the repayment is proposed to apply in any period where the LTES operator's net operational revenue is above its LTESA net revenue threshold. The repayment amount is calculated as:

benefit-sharing percentage * (net operational revenue – LTESA net revenue threshold) * contracted capacity *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator.**

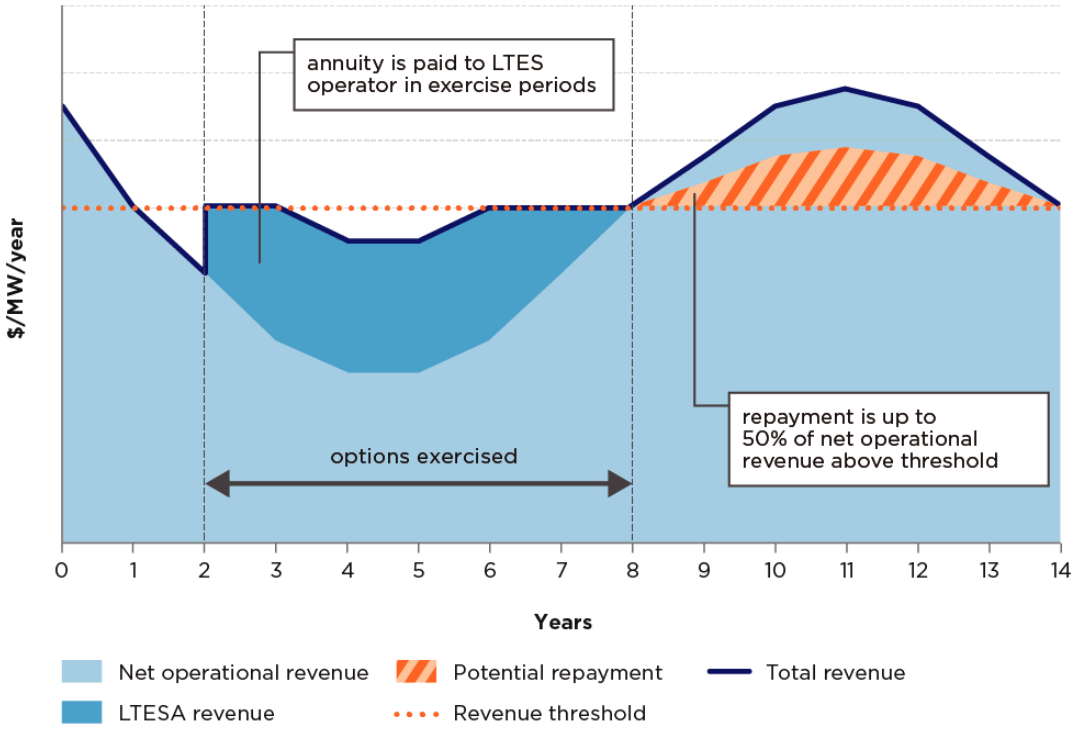
To continue to encourage an LTES operator to profit-maximise, it is proposed the repayment include a benefit-sharing percentage that allows the LTES operator to retain a percentage of upside profits beyond the net revenue threshold. The proposed benefit-sharing percentage is 50%. The benefit-sharing percentage will be applied as a multiplier on the difference between total net operational revenues and the LTESA net revenue threshold.

Consideration is being given to methods that ensure LTES operators consider the exercise of the option as a payment of last resort. One option is for the long duration storage LTESA to have fewer exercisable options than the maximum amount that add up to the total contract term. In this way, the LTES operator has incentive to carefully consider when it should exercise the option to maximise its annuity payment.

Illustrated example

Across the LTESA term, the LTES operator may choose to exercise the Annuity Payment Option in certain years. Figure 9 illustrates a long duration storage facility with fluctuating market revenues over time. In the years the option is exercised, the LTES operator receives an annuity payment (in dark blue) of up to the contracted annuity amount, in addition to its operational revenues. The LTES operator's annuity payment is reduced such that the sum of the annuity and net operational revenues does not exceed the net revenue threshold. A percentage of total net operational revenues above the net revenue threshold (the dotted line), may be repaid to the Scheme Financial Vehicle through the repayment mechanism.

Figure 9 Simple cash flows for long duration storage facility with Annuity Payment Option LTESA



Illustrated example: alternative

Where an LTES operator exercises the Annuity Payment Option and its net operational revenues exceed the net revenue threshold, no annuity payment is made. The repayment mechanism may also apply in this instance if there are historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator from the previous exercise of an option.

Key takeaways

- *The LTES operator receives an annuity payment from the Scheme Financial Vehicle in exercise periods*
- *The annuity payment from the Scheme Financial Vehicle to the LTES operator would be limited so that it equals the lesser of the contracted annuity amount, or the net revenue threshold – net operational revenues*
- *When the operator does not exercise the option, no annuity payments are provided*
- *In both exercise and non-exercise periods, the repayment mechanism will allow the Scheme Financial Vehicle to recoup historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator if the LTES operator's total net operational revenues exceed the LTESA net revenue threshold*

Virtual Storage Option

Design characteristics

Under the Virtual Storage Option, an LTES operator will receive a fixed price spread when it exercises the option. Effectively, it is a swap on the price spread between the (average of one or more) highest and lowest spot price intervals in a defined period, such as a day or week.[21] It provides a price guarantee for market arbitrage and reduces the downside risk of low revenues from minimal spot price volatility for an LTES operator.

The structure provides a risk hedge for long duration storage facilities expecting to predominantly operate an arbitrage strategy on wholesale spot prices. Long duration storage facilities will bid a fixed price spread in a tender process. If the spot price spread in an exercise period is:

- lower than the LTESA fixed price spread, the LTES operator will receive payments from the Scheme Financial Vehicle to make up the difference
- higher than the LTESA fixed price spread, the LTES operator will make a payment to the Scheme Financial Vehicle.

When exercised, there is no obligation for the long duration storage facility to physically hedge the contract, although it is expected that most LTES operators will do so to minimise exposure to financial risks. An LTES operator can physically hedge the exercised option by operating on an arbitrage strategy, storing energy when spot prices are low and dispatching energy when prices are high, while receiving the LTESA's fixed price spread.

[21] An example of such a product is discussed in Renewable Energy Hub's Lessons Learned Report #2 (PDF 732KB), July 2020, see page 11.

An LTES operator may be unable to perfectly capture the maximum arbitrage potential of the wholesale market due to imperfect foresight and operational limitations. It is expected that LTES operators will adjust the LTESA fixed price spread they bid to incorporate these forecasting and operational risks.

Repayment mechanism

The repayment applies in non-exercise periods and is calculated as:

benefit-sharing percentage * (net operational revenue – LTESA net revenue threshold) * contracted capacity *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator**

To encourage an LTES operator to profit-maximise, the repayment is proposed to include a benefit-sharing percentage of 50%. This percentage will be multiplied by the amount an LTES operator's net operational revenue exceeds the net revenue threshold.

The repayment would only apply during non-exercise periods because cash can flow in either direction between the Scheme Financial Vehicle and operator during exercise periods and payments are linked to spot price outcomes. No repayment amount would apply during exercise periods and the repayment would be limited to the historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator.

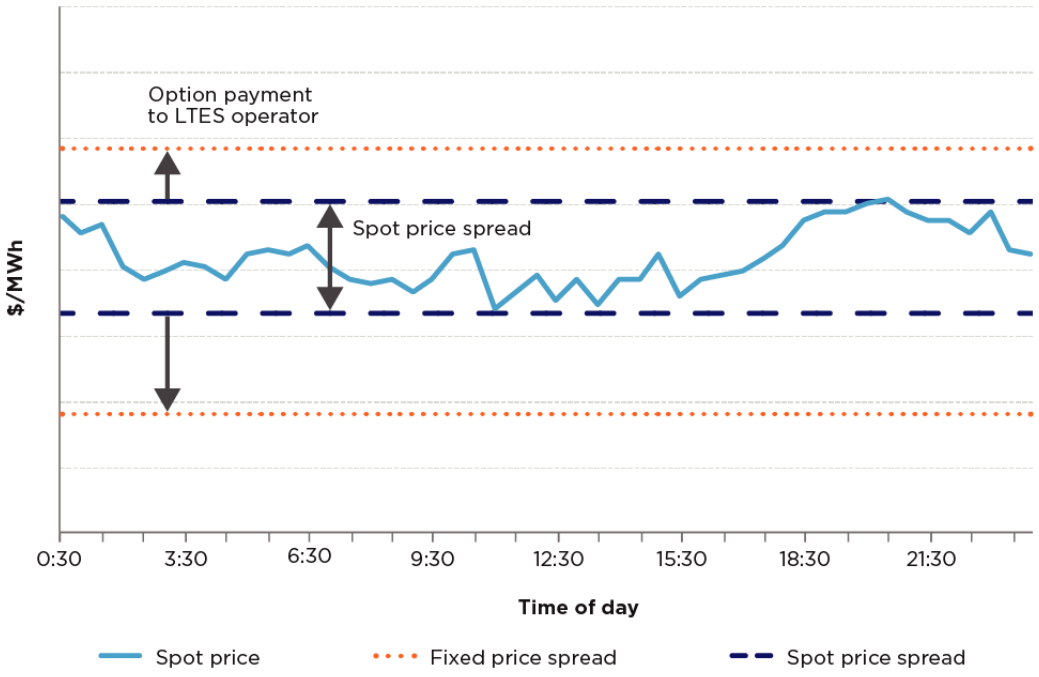
The net revenue threshold is bid in the competitive tender process and sets the minimum total net revenue of the LTES operator before the repayment mechanism applies.

Consideration is being given to other repayment mechanism designs for this structure, such as using the difference between actual spot price spread outcomes and the fixed price spread in repayment calculations. Under this mechanism, the repayment would operate when spot market volatility is high and the LTES operator captures suitably high revenue.

Illustrated examples

Figure 10 and Figure 11 present example cash flows for a long duration storage LTESA that uses the Virtual Storage Option structure in a period with low and high volatility, respectively.

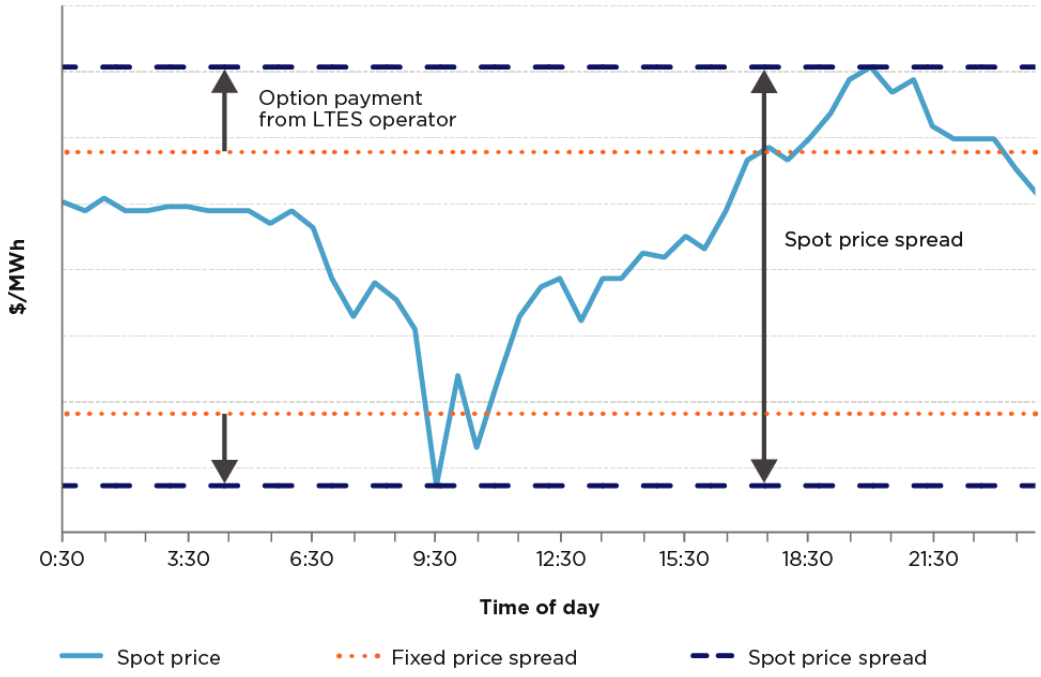
Figure 10 Long duration storage LTESA cash flows relative to spot price spread for a day with low volatility



In Figure 10, the spot price spread is lower than the fixed price spread. Assuming the LTES operator has exercised the LTESA option, the Scheme Financial Vehicle will pay the LTES operator the difference between the fixed price spread and the spot price spread, multiplied by the contractual volume.

In Figure 11, the spot price spread is higher than the fixed price spread. Assuming the LTES operator has exercised the LTESA option, the LTES operator will pay the Scheme Financial Vehicle the difference between the spot price spread and the fixed price spread, multiplied by the contractual volume.

Figure 11 Long duration storage LTESA cash flows relative to spot price spread for a day with high volatility



In any non-exercise periods (not shown) where there has been a historical cumulative net payment from the Scheme Financial Vehicle to the LTES operator, a repayment may apply.

Key takeaways

- *In exercise periods, the LTES operator receives a fixed price spread for their contracted volume*
- *In non-exercise periods, the LTES operator is exposed to the spot price spread*
- *In non-exercise periods, the repayment mechanism will allow the Scheme Financial Vehicle to recoup historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator if the LTES operator's total net revenues exceed the LTESA net revenue threshold*
- *Alternative repayment mechanisms, including a suggested approach that calculates repayments based on the spot price spread in non-exercise periods, are also being considered*

Super Peak Option

Design characteristics

Under the Super Peak Option, an LTES operator will receive a fixed price for dispatch during certain pre-defined hours ('super peak' times) in a day or across the year when it exercises the LTESA option. The Super Peak Option is a cash settled swap and is similar to an ASX Quarterly Peak Load Futures contract[22] but limited to fewer hours each day[23].

When an LTES operator exercises an option, the fixed price and megawatt capacity specified in its LTESA will apply to the calculation of the swap payments during 'super peak' times. The fixed price and capacity will be bid in a competitive tender process.

LTES operators can physically hedge an exercised Super Peak Option by dispatching their contracted megawatt capacity during 'super peak' times. This structure provides price certainty in super peak intervals but does not provide any price certainty for the purchase of electricity outside of super peak intervals when the long duration storage facility buys energy from the market to store for later dispatch.

An LTES operator may choose to not exercise its option if it:

- forecasts higher super peak spot prices than the fixed price in an option period
- identifies other markets with higher profit potential than the wholesale market or LTESA
- can enter a more profitable contract with a third party in parallel with the LTESA.

During non-exercise periods, a repayment mechanism is expected to apply, allowing the Scheme Financial Vehicle to recoup previous payments. The repayment will be limited to historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator from the previous exercise of an option.

Repayment mechanism

The repayment mechanism may be calculated as:

benefit-sharing percentage * (net operational revenue – LTESA net revenue threshold) * contracted capacity *up to a maximum recovery for the SFV equal to the* **historical cumulative net payments from SFV to LTES operator**

To encourage an LTES operator to profit-maximise, the repayment is proposed to include a benefit-sharing percentage of 50%.

The net revenue threshold is bid in the tender process and sets the minimum total net revenue of the LTES operator before the repayment mechanism applies.

The repayment mechanism would only apply during non-exercise periods because cash can flow in either direction between the Scheme Financial Vehicle and operator during exercised periods and payments are linked to spot price outcomes. No repayment amount would apply during exercised periods and the repayment would be limited to the historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator.

Other repayment mechanism designs may also be appropriate for the Super Peak Option structure; for example, an alternative calculation of potential repayment could be the difference between spot price outcomes in non-exercise periods and the fixed price at super peak times. No repayment amount would apply during exercised periods and the repayment would be limited to the total cumulative payments from the Scheme Financial Vehicle to date due to the exercise of the LTESA.

[22] ASX peak profile definition: 1 megawatt of electrical energy per hour based on a peak load profile, where the peak load profile is defined as the Wholesale Electricity Pool Market peak load period from 7am to 10pm Monday to Friday (excluding public holidays and any other days determined by the ASX) over the duration of the contract quarter.

[23] with possible definitional changes between summer and winter months.

Illustrated example

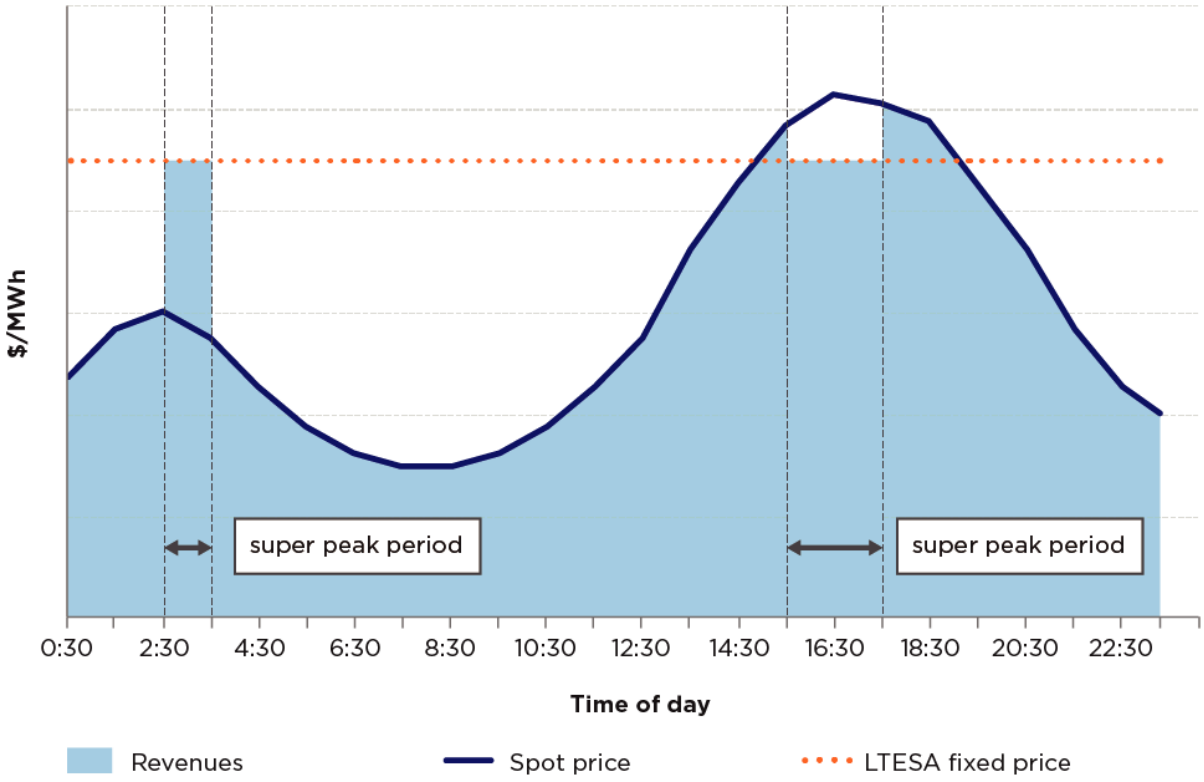
The cash flows resulting from the Super Peak Option are comparable to a swap where the fixed price acts as a strike. A key difference between this structure and a simpler swap is that it only applies in certain pre-defined periods of the day or year. In an exercise period, if the spot price in a 'super peak' interval is:

- above the LTESA fixed price, the LTES operator pays the difference to the Scheme Financial Vehicle
- below the LTESA fixed price, the LTES operator would receive a payment of the difference from the Scheme Financial Vehicle.

Figure 12 shows an example day within an exercised period with the super peak intervals targeted at the morning and evening peak times. At these times, when the spot price is lower than the fixed price, the LTES operator receives an additional payment from the Scheme Financial Vehicle; when the spot price is lower than the fixed price, the LTES operator makes a payment to the Scheme Financial Vehicle.

In any non-exercise periods (not shown) where there has been a historical cumulative net payment from the Scheme Financial Vehicle to the LTES operator, a repayment would apply.

Figure 12 Simple cash flows for LTESA with the Super Peak Option (super peak times are indicative)



Key takeaways

- *In exercise periods, the LTES operator receives a fixed price for dispatch in super peak times*
- *In non-exercise periods, the LTES operator is exposed to the spot price spread*
- *In non-exercise periods, the repayment mechanism will allow the Scheme Financial Vehicle to recoup historical cumulative net payments from the Scheme Financial Vehicle to the LTES operator if the LTES operator's total net operational revenues exceed the LTESA net revenue threshold*
- *Alternative repayment mechanisms, including a suggested approach that calculates repayments based on the spot prices in super peak times during non-exercise periods, are also being considered*

Have your say

Firming LTESA

11. What should be considered for the design of a firming LTESA?
    a. How suitable are the proposed long duration storage LTESA designs and terms as a basis for a firming LTESA?
    b. What other designs could be suitable for a firming LTESA? For example, an option to enter a cap contract.
    c. Do you have any other feedback on the firming LTESA design?

Long duration storage LTESA

12. How effective is the long duration storage LTESA design concept in meeting the intended objectives?
    a. What are your views on the overall long duration storage LTESA design concept?
13. Which is your preferred long duration storage LTESA design? Please explain your response or describe an alternative.
14. We are seeking feedback on how **risk has been allocated** within the long duration storage LTESA design concept. How can the risk allocation be optimised to meet the design objectives?
15. How can we reduce the complexity of the design without significantly altering a project's cost of capital or bid prices?
16. Our intention is for the long duration storage LTESA contracted annuity amount to cover the expected shortfall of net operational revenue in meeting the minimum revenue required for investment. How would a project develop a bid for the annuity amount?
17. We want to ensure the long duration storage LTESA retains the incentive for a project to operate in a profit-maximising way. To what extent is this encouraged in the Annuity Payment Option? Will the reduction in a project's annuity payment as its revenue approaches the net revenue threshold continue to incentivise profit-maximisation?

18. We would like to understand the market opportunities for long duration storage.
    a. Which markets and services (both existing and future) are expected to be valuable to a long duration storage facility with 8 hours of storage?
    b. How will revenues from these markets affect the contracted annuity amount that is bid?
    c. Will a long duration storage LTESA change a facility's participation in other markets?
19. We would like your feedback on the long duration storage LTESA **repayment mechanisms**.
    a. How will the proposed repayment mechanism affect the contracted annuity amount that is bid?
    b. Are there any issues with the repayment design that might impact a project's operating or contracting strategy?
20. We are seeking feedback on projects' decision-making for exercising their long duration storage LTESA options.
    a. What are the key factors that will influence the decision to exercise an option?
    b. Would a project operate differently if it has exercised an option?
    c. How would exercising an option affect the contracting strategy of a project?

Section 6: Key legal and project terms

This section provides an overview of key legal and project terms in the LTESA, the proposed position and the rationale for of that position (Table 4).

Have your say

21. Which legal terms have the most significant impact and least significant impact on project certainty, bid prices and the weighted average cost of capital?
22. Are there any other substantive legal terms we should consider?

Table 4 Proposed position on key legal and project terms

	Legal/project term	Proposed position	Rationale
1	Green rights and large-scale generation certificate obligations	The proposed position for LTESAs is that the Scheme Financial Vehicle will be entitled to all applicable large-scale generation certificates and future green rights that can be created by the LTES operator in exercise periods. However, consideration is being given to allow alternative bids which could include the proponent bidding a different price for electricity only.	The LTESA term will extend beyond the expiry of the Renewable Energy Target and it is not clear to what extent that target will be replaced. However, it is expected that renewable projects will be able to create 'green' products in either regulated or voluntary markets and there will be a revenue stream outside the energy market. The default position is the LTESA fixed price is a 'bundled' price to mitigate the concern that consumers could be making payments under an energy-only LTESA where projects are potentially receiving substantial revenues from other sources.

	Legal/project term	Proposed position	Rationale
2	Future 'black' products / additional revenues from participation in new 'capacity' markets	The proposed position is that the Scheme Financial Vehicle is entitled to any new products or revenues from new markets in exercise periods. This includes other future economic rights, other than green rights, conferred on the project by regulation. 'New products' will include capacity and generation payments, credits, compensation or any other certificate or similar benefits made for capacity or availability of the project.	Recent energy reforms suggest that the National Electricity Market needs to value the availability and dispatchability of generating plant and long duration storage rather than relying on the energy market alone to compensate for these attributes. Long duration storage, and to a lesser extent renewable generators, can provide these services. For example, the Retailer Reliability Obligation (RRO) incentivises retailers to contract with generation to be available at peak times during reliability gaps and, if a physical RRO is introduced, projects may be able to issue and sell 'capacity' certificates. However, it is not yet clear that these attributes will be separately valued and capable of being sold separately to energy. The Department considers that the Scheme Financial Vehicle should be entitled to these benefits when a generation option is exercised as it will facilitate the Scheme Financial Vehicle 'on-selling' its position to the market. The extent to which this should apply to long duration storage will depend on the final structure of the LTESA. Including these revenue streams in the LTESA design, ensures LTES operators only receive LTESA payments if they would otherwise be earning less than minimum returns.
3	Escalation	The starting position is that the LTESA bid price does not include Consumer Price Index (CPI) escalation, i.e. prices are in nominal terms. However, consideration is being given to the option for escalation by the lower of the actual or assumed CPI.	Changes to wholesale energy prices are not necessarily correlated with changes in CPI. Given this is a long-term agreement, the Department is concerned that year on year CPI escalation could lead to an LTESA fixed price that is fundamentally out of step with underlying wholesale prices. This would be contrary to the policy intention that the LTESA is a 'fallback' and could lead to the options being exercised on a continuous basis.
4	Pre-financial close interim milestones	An LTES operator will be required to meet a series of interim milestones prior to financial close by agreed interim milestone dates. The interim milestones will depend on the project but are likely to include Foreign Investment Review Board approval, environmental approvals and securing tenure (as relevant), which are critical milestones to development and can be expected to occur in advance of financial close. The Scheme Financial Vehicle/Consumer Trustee will also require periodic reporting on project status, which will include progress on matters other than the interim milestones.	The intention is to provide a relatively generous period to reach financial close where possible. In these circumstances, the Consumer Trustee and Scheme Financial Vehicle requires key milestones and reporting to ensure the project is still proceeding and to have an early understanding of any delays.

	Legal/project term	Proposed position	Rationale
5	Conditions precedent (financial close)	Conditions precedents are: 1 financial close 2 notice to proceed under engineering, procurement and construction (EPC) contract. Conditions precedents are required to be satisfied by a sunset date defined in the contract. The LTESA will terminate if the project does not reach financial close by a defined financial close sunset date, unless the Scheme Financial Vehicle extends or waives the financial close sunset date. The Scheme Financial Vehicle may call on the full value of the financial close security at termination and that will be the Scheme Financial Vehicle's sole remedy for such failure.	This is a standard approach and enables the Scheme Financial Vehicle to terminate an LTESA and re-tender should a project not be able to achieve completion in the required time.
6	Bonding	If the LTES operator does not have an investment grade credit rating or is not guaranteed by an investment grade parent, the LTESA will require three bonds (in the form of a letter of credit or bank guarantee) be provided to the Scheme Financial Vehicle.	Ensuring the integrity of bid processes for projects requires proponents to make significant contractual commitments to the Scheme Financial Vehicle and for these commitments to be collateralised by financial security. For probity reasons, all proponents will be required to make the same legal commitments to the Scheme Financial Vehicle and provide on-demand security to support these commitments. The key project commitments are expected to be based on the following milestones: 1 Financial close security – to be provided at signing of the LTESA. 2 Commercial Operations Date security – to be provided at financial close. 3 Operating period security – to be provided at the exercise of the option (each time the option is exercised). The form of security is expected to be on-demand (or similar). The security is expected to be sized to protect against the Consumer Trustee and Scheme Financial Vehicle's actual estimated loss should a project not meet a legal commitment under the LTESA.

	Legal/project term	Proposed position	Rationale
7	Cost reduction sharing between signing and financial close	The Consumer Trustee and the LTES operator are expected to share in net cost savings in relation to key cost inputs that emerge for projects between the tender and financial close, but it is a one-way mechanism and the parties will not share in net cost increases during that period. These cost reductions are expected to be reflected in a reduction in the LTES fixed price for generation LTESAs and a reduction in the contracted annuity amount for long duration storage LTESAs. The Department proposes to allow a relatively long period after signing to allow LTES operators to achieve financial close before penalties are incurred and the contract is terminated.	A challenge to consumer cost outcomes has been excess value that has been captured by projects between bid lodgement and financial close. In large infrastructure procurements the project takes the benefit and risk of any efficiencies achieved between binding bids and construction completion. For energy infrastructure it is recognised that adjustments to this are required for the following reasons: • projects generally enjoy an improvement in procurement terms following the award of a Power Purchase Agreement. The contract award significantly increases the likelihood of the project proceeding and obtaining financing • technology improvements (e.g. larger wind turbines) and significant price declines (e.g. energy storage) have seen substantial improvements in levelised costs of electricity through final procurement • changes in foreign exchange result in gains or losses for projects. Historically, in renewable energy infrastructure, these risks have been managed by offtakers providing short timeframes to achieve financial close and commissioning. Projects have then managed these risks by pushing tight timeframes and risks onto EPC contractors. This has resulted in a range of issues for projects, offtakers, network service providers and the Australian Energy Market Operator. In some Power Purchase Agreement processes in Australia and overseas, projects bid expected cost reductions and are unable to deliver when these cost reductions do not emerge. The Department would like to generate better outcomes for consumers by allowing projects longer timeframes to achieve project milestones and flexibility to optimise procurement and supply chains. This is expected to improve consumer outcomes and to achieve a more sustainable EPC market and associated supply chains. To achieve this, the position is that an LTES operator will share a percentage of cost reductions in relation to project costs occurring in the period between signing an LTESA and the financial close of the project. The adjustment will be one way, and for probity reasons, the project will not have the ability to increase its costs. The cost reduction sharing will be implemented by open book disclosure and subsequent adjustment to the payment structure and/or fixed price of the LTESA.

	Legal/project term	Proposed position	Rationale
8	Upside sharing/earnout structure	If the LTES operator sells down the project within a defined period from the signing of the LTESA, the LTES operator must pay the Scheme Financial Vehicle the higher of: • any amount by which cumulative payments by the Scheme Financial Vehicle under exercised options exceed the cumulative payments by the LTES operator to the extent not already paid under the repayment mechanism • a defined share of any revenue performance above a defined threshold that is measured on an internal rate of return basis. LTES operators could be requested to bid the internal rate of return threshold above which returns will be shared with the Scheme Financial Vehicle.	The LTESA is intended to be a form of downside protection for projects. It is recognised that project developers seek to develop, build and ultimately sell the project to a long-term owner. Because much of the value of a project is generated through the LTESA, it is proposed that where project owners sell or recapitalise the project within a specified period, a share of the profit released is shared with the Scheme Financial Vehicle. This structure mirrors overage or sharing provisions used in international energy markets and public–private partnership models. To implement this, if the LTES operator sells down the project within a defined period from the signing of the LTESA, the LTES operator must pay the Scheme Financial Vehicle the higher of: • any amount by which cumulative payments by the Scheme Financial Vehicle under exercised options exceed the cumulative payments by the LTES operator to the extent not already paid under the repayment mechanism • a defined share of any profit above a defined threshold that is measured on an internal rate of return basis. LTES operators will be requested to bid the internal rate of return threshold above which returns will be shared with the Scheme Financial Vehicle.
9	Scheme Financial Vehicle termination for convenience	Consideration is being given to asking bidders to bid a fixed amortising termination amount for each year of the term. The Scheme Financial Vehicle will have the right to terminate the LTESA for convenience at the relevant termination amount.	LTESAs are long-term agreements. The Department considers it prudent for the Scheme Financial Vehicle to have a mechanism to terminate the agreements should circumstances change over time.

	Legal/project term	Proposed position	Rationale
10	Change in law and market disruption events	The Department recognises the importance of change in law and market disruption provisions in achieving the LTESA objectives. The proposed position outlined will evolve based on the final structure of the Scheme Financial Vehicle and we welcome feedback on the principles outlined below. These principles have been prepared to align with market practice in the wholesale contracts market, except where changes pertain to changes of law by the NSW Government in relation to the Roadmap. The proposed position in relation to the change in law regime is as follows: **General change in law** – It is expected that the change in law regime will deal with general changes in law via cost sharing mechanisms. A series of exclusions, customary in the electricity sector, will be included. **Changes in NSW law impacting the Roadmap** – It is anticipated that there will be broad protections for changes in law by the NSW Government which directly impact the operation of the EII Act provisions in respect of the Scheme Financial Vehicle or an LTESA. This could include a specific termination regime (e.g. lump sum payments). **Market disruption events** – It is proposed to include a standard market disruption event used in over-the-counter contracts based on International Swaps and Derivatives Association and Australian Financial Market Association documentation.	The impact of change in law, regulation and national electricity law was identified as a deterrent for investment during the development of the EII Act. This concern reflects the degree of regulatory change, including the Energy Security Board's post-2025 National Electricity Market redesign process. The Department is aware that LTESAs can play a role in reducing regulatory uncertainty for projects. The policy objective is for the change in law risk to be mitigated to facilitate investment but not for consumers to take on excess change in law risk. Further, it is understood that Power Purchase Agreements often involve a sharing of change in law risk between offtakers and projects. It is not intended that the LTESA, which is designed as a downside protection mechanism, become relatively more favourable than market Power Purchase Agreements if there is a change in law. For example, the Department's intention will be to preserve the downside protection offered by the LTESA but not to provide any protection in excess of this. The intent is to include measures to protect LTES operators from material changes in the effect of NSW law constituting the Roadmap that specifically affect the operation of the LTESAs or the efficacy of the Scheme Financial Vehicle. The scope of this protection is under consideration. As a general principle, it is expected that projects bear the risk of locational decisions (subject to the terms of REZ access rights) and the LTESAs will not be providing protection against grid congestion. The Department's perspective is that it is important that project sponsors use locational price signals to determine the locations of their projects.