

Electricity contract co-design

Workshop 4 discussion materials

7 October 2026

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Acknowledgement of Country



We acknowledge the Traditional Owners of Country throughout Australia, and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present

Source: *Gadigal Country – Here and Now* by Dunghutti and Biripi Artist, Wanita Lowe, commissioned by L.E.K. as part of our Reflect RAP

Competition and Consumer law obligations and information sharing

The Competition and Consumer Acts prohibits anti-competitive conduct, including:

Cartel conduct

Contracts, arrangements or understandings between competitors to fix prices, restrict supply or acquisition of goods/services, allocate customers, suppliers, territories or rig bids

Concerted practices

Other cooperation between competitors with the purpose, effect or likely effect of substantially lessening competition

Substantially lessening competition

Any other contracts, arrangements or understandings which have the purpose, effect or likely effect of substantially lessening competition

Any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition

Under no circumstances may Working Group members share competitively sensitive information with one another. As a general rule, if a Working Group member considers information to be sensitive from a commercial perspective and the information is not publicly available, it should not be discussed during Working Group meetings

Principles for how we will work together as a team

Public Purpose Mindset

- Bring your experience and perspectives, but also step outside of them to consider the effect across the market and the grid
- Act in line with the National Electricity Objectives

Ownership

- The Working Group, not the Convening Group, owns the recommendations
- We're looking for this group to lean in and help drive the process
- Decisions should aim to reach consensus and represent all sides of the market

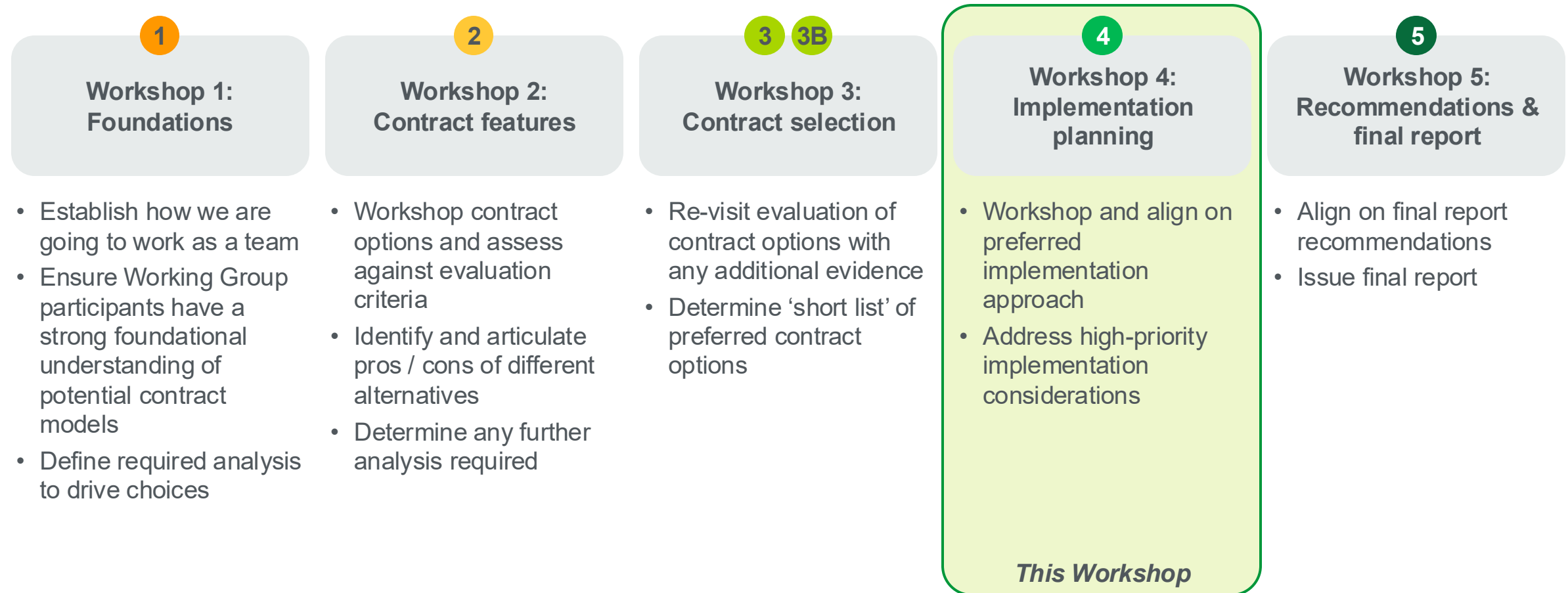
Constructive Participation

- A workable, imperfect, but standardised product beats many bespoke ones
- Constructive compromise is key
- Disagreement should always be clear and civil
- **Opinions without sufficient data to support them will not be treated as equal to evidence-backed perspectives**

Openness

- Chatham house rules apply – you can share externally but do not attribute. Where possible we will agree common talking points for what is shared across the industry
- We plan to invite participation of other industry representatives when their input would be valued

Workshop 3 will focus on evaluating evidence of contract suitability, and contract selection



Objectives for Workshop 4

Workshop 4 will focus on residual issues and implementation for designs developed in 3B:

Bulk Energy

- 1 Resolve final positions on caps, floors and hybrid projects
- 2 Results presentation based on Baringa modelling
- 3 Consider applications for hybrid projects

Shaping

- 4 Resolve final positions on daily shaping windows and block setting method

Firming

- 5 Resolve final positions on strike price selection

Other issues

- 6 Capture industry position on supplementary FM support requirements
- 7 Consider contract suitability to meet MMO requirements
- 8 Capture industry position on contract auction design implications
- 9 Review early feedback from stakeholder consultation

ESEM Contract Co-design: Workshop 4 Agenda

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8:45-9:00am	15 mins	Arrival and set up	Arrival and set-up at L.E.K. Sydney office
9:00-9:45am	45 mins	Introduction and recap of industry engagement and feedback	- Re-cap of objectives, norms and protocols and takeaways from Workshop 4 - Summary review of stakeholder consultation feedback themes
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11:00am-12:00pm	60 mins	Bulk energy – resolve final positions on caps, floors and hybrid projects	- ASL presentation on open issues, including feedback from stakeholder consultation - Preference to align via consensus on preferred positions, with voting used only in tie-break situations
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2:10-2:40pm	30 mins	Implementation themes – supplementary support for Force Majeure risks	- Recap of Key FM feedback from stakeholders and the presentation from Ben Humphries from BMS - Focus on defining the most critical issues a policy support mechanism would need to solve
2:40-3:20pm	40 mins	Implementation themes – contract recycling, and contract suitability to fulfil MMO obligations	- Recap of ‘what we know so far’ on MMO design - Collection of perspectives on MMO operability with the proposed contracts and identification of barriers
3:20-3:30pm	10 mins	Afternoon break	
3:30-4:00pm	30 mins	Implementation themes – auction design and ESEMA as primary vs supplementary off-taker	- Identification of key auction design considerations that the administrator will need to consider - Identification of potential issues of concerns of ESEM contracts being used as a primary financing instrument
4:00-4:30pm	30 mins	Summary and next steps	- Summarise key outcomes and positions and any outstanding issues - Align on the forums for resolving outstanding issues (intersessional work, external views, etc)? - Process to deliver the final report and plan for Workshop 5
4:30-4:45pm	15 mins	Post-workshop communications	- Post-workshop review and publication timing - Align on timing and presenters for Webinar 3



Stakeholder Feedback: Initial Insights

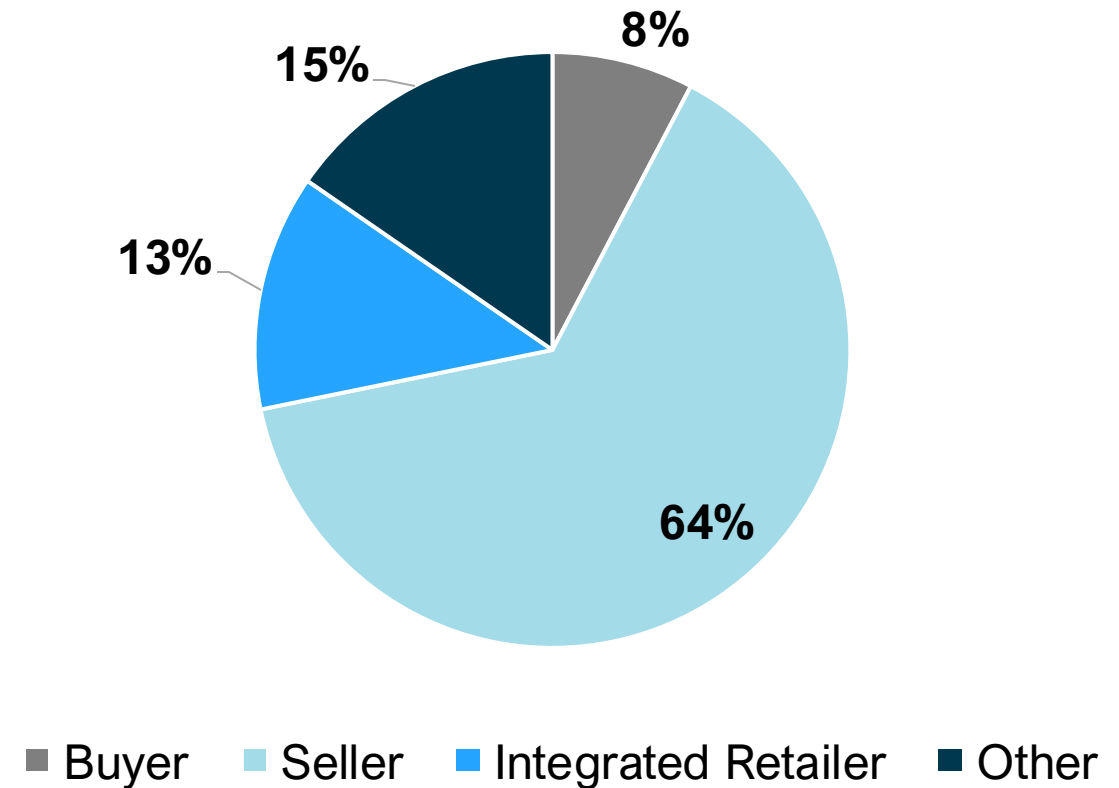


Response Overview

- **42 submissions** received¹.
- **Responses from a range of sellers.**
- **Some representation from buyers and organisations** that could be both buyers and sellers of the ESEM contracts (i.e. gentailers), including a submission from EUAA representing C&I users.
- Other includes consultants and representative groups.

¹ Submission count at 4pm, 6/10/26

Source: ASL high-level analysis of submissions received



Overarching Feedback

Question	Feedback	
12. Do the proposed contract structures achieve the Working Group's Terms of Reference and perform well against the identified evaluation criteria?	• Generally, stakeholder feedback suggests the structures could achieve good alignment to the ToR, subject to resolution of some concerns: ○ Bankability (FM the greatest concern) ○ Technology neutrality (incentives for > 8hr capable assets) ○ Operationalisation of the shaping product ○ Usefulness of the products to buyers	
13. Are there any concerns with the ability of the proposed products being subject to a Market Making Obligation (MMO) in the future?	• Bulk energy: General support, however, some stakeholders raised that the variable volume may impact RRPPA use in MMO and limits tradability. Suitability contingent on index design. • Shaping: Stakeholders raised that the dynamic block setting approach increases the complexity to value and quote the product. • Firming: General support, however, some stakeholders noted challenges in independent storage projects defending the position which could impact sellers.	
14. Will the proposed contract structures, in conjunction with other risk management contracts, such as flat swaps, evening peak swaps or caps, be effective for buyers (e.g. retailers, large loads, etc.) to manage financial risks?	• Moderate support of proposed product suite with caveats. • Some concerns regarding retailer/user utility and whether large users will be unable to manage financial and load-following risks. • Noted that secondary markets and intermediaries will continue to provide an important function in re-packaging the ESEM products into alternative structures that could meet buyers needs.	

Feedback on Contract Structures

Bulk Energy



- **Well supported design** and preferred to other options (e.g. DWA price swap) for onshore solar and wind.
- The proposed **\$600 price cap** (aligned to the strike of the firming product) **was strongly supported by sellers but is a point of contention for buyers** of the product given it may result in the need for additional firming.
- **Almost unanimous support for a negative price provision**, however, there is **mixed views between a price floor or volume knock-out** mechanism.
- Several stakeholders requested **further clarity on index design** and how the RRPPA would **apply to hybrid projects and off-shore wind**.

Shaping



- General support for the spread swap concept, however, **concerns around the proposed dynamic block setting approach**.
- Several stakeholders, including energy user/retailers shared **concerns regarding the value of the product as a hedge to manage loads**, given the variability of the charge/discharge periods and day ahead nomination approach.
- Stakeholders also noted that the value of the product was **reliant on the accuracy of the residual demand forecast**.

Firming



- General alignment that a cap product is suitable for incentivising firming assets.
- Some concerns raised that **the service will provide a strong incentive for longer duration firming assets** that can provide benefits during prolonged high price periods and that this may need to be addressed through special tenders.
- **General support for the strike price being aligned with the APC** – some suggestions that this should be explicitly linked to the APC rather than set at \$600/MWh, however, **some concerns from buyers about implications of \$600 strike**.

- FM was raised by many respondents as a key outstanding design issue across all three products. General consensus that sellers will need relief from some FM events but this must happen outside the contracts to ensure they remain fungible.
- General support for weekly settlement with some further detail requested around settlement calendar and how changes could be managed efficiently.

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Bulk Energy Product: Key Issues



Recap: Requirements and Evaluation Criteria

Objectives

The Working Group is responsible for developing standardised electricity derivative contract structures covering the three core ESEM services as defined in the NEM Review Final Report (bulk energy, shaping and firming) that meet the following required attributes:

1. **Could be used to finance new electricity service provider projects via the ESEM.**
2. **Could be subject to an MMO.**
3. **Are in the form of a final contract template.**

Contract Evaluation Criteria

Bankable:	Supports reasonable financing terms for new projects.
Operationally achievable:	Can be readily implemented in a real-world setting.
Efficient at allocating risks:	Assigns risks to buyers and sellers based on who is best placed to manage, and thus preserves incentives for optimal investment/operational decisions.
Attractive for sellers & buyers:	Will support the entry of new electricity service providers and could be attractive to energy buyers seeking to manage their portfolios.
Adaptable to the future market:	Will continue to perform as intended as market conditions change in future.
Complementary within a set:	Works as part of a set of standard contracts which could, by themselves or when integrated with secondary market contracts, be used to efficiently hedge customer load.
Simple to value:	Sellers and buyers can confidently determine a price to ascribe to the contract.

RRPPA - Summary of Key Issues for Discussion

We have compiled a list of key issues for resolution, based on stakeholder feedback.

Ref	Title
01	Negative Price Provision
02	Price Cap Provision
03	Treatment of Hybrid Projects in the Index
04a	Definition of Operational Projects – Entry and Exits
04b	Definition of Operational Projects - Outages

Issue 1: Negative Price Provision

Issue Overview

Sellers wish to maximise certainty of cash-flows, whilst Buyers wish to minimise payments during negative price intervals. **Whilst more stringent negative price provisions reduces buyer payments during negative price periods, they naturally drive a higher Fixed Price as the same LCOE must be recovered from less volume (and/or less certain volumes).**

In the market today, bi-lateral PPA's, CISA and LTESA contracts contain a mix of no negative price provisions, \$0 price floors and \$0 volume knock-out arrangements. For the RRPPA, the settled volume is derived from the Reference Fleet, of which a project contributes no more than 10%. Over time, it is anticipated that there would be fewer projects within the Reference Fleet without any negative price provisions in their offtake agreements. Green certificate prices are forecast to remain low (\$0-10/MWh), driving continued shallow negative prices.

Stakeholders strongly supported a negative pricing provision but were divided between a price floor or volume knock-out mechanism.

Relevant Contract Evaluation Criteria

1. **Bankability** – treatment of negative prices impacts uncertainty over settlement volumes and revenue certainty.
2. **Efficient at allocating risks** – treatment should balance payments during negative price intervals and impacts on Fixed Price.
3. **Adaptable to future market** – treatment should be flexible to changes in the frequency and magnitude of negative price events in the future.

Further Information / Analysis

Baringa's analysis will provide quantitative insights into the impact of selection. Please see the following slides:

1. High-level cash-flow analysis showing Seller net position for each option for various negative prices.
2. Summary of stakeholder feedback received.

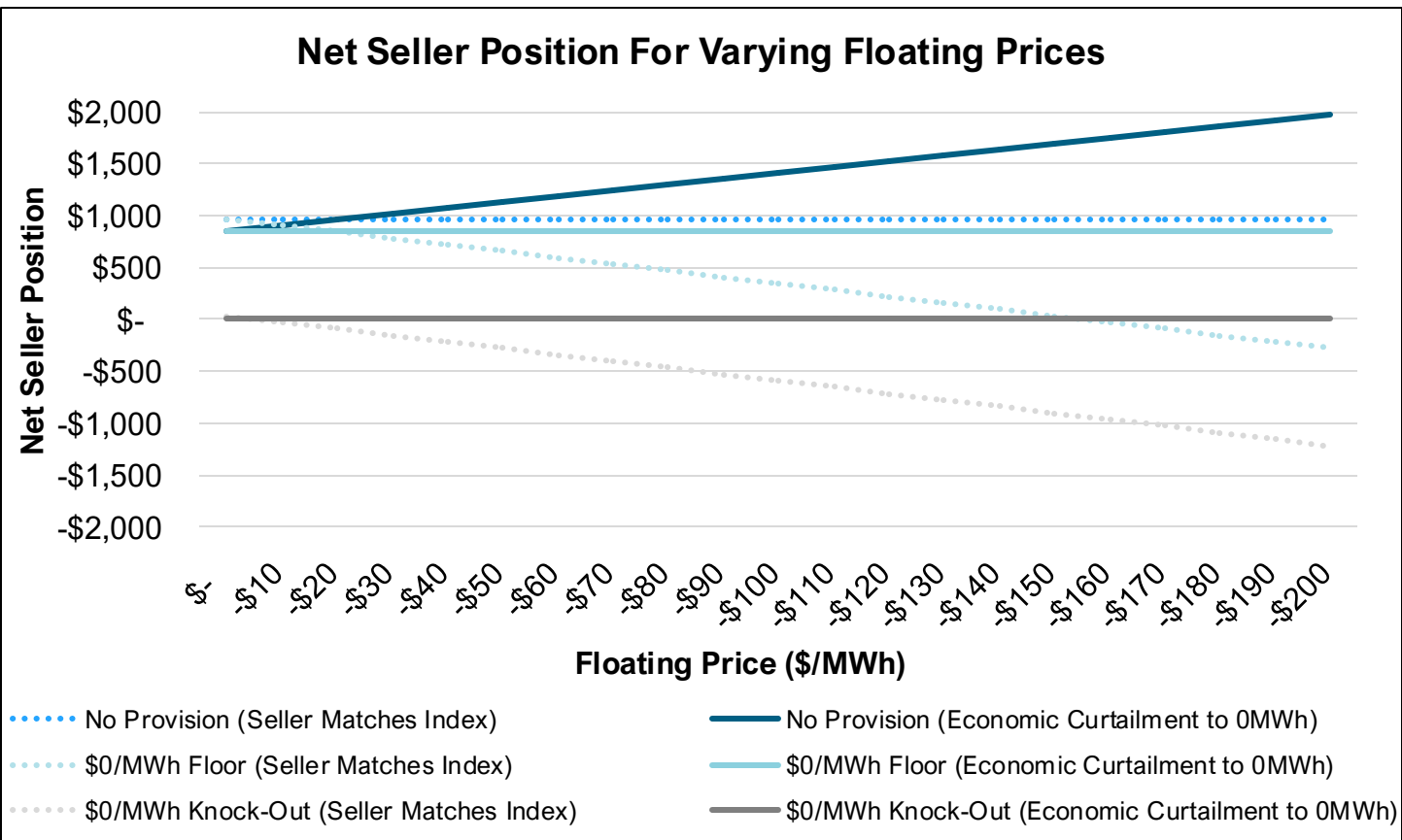
Options Identified

Option Title	Break Even Negative Price (no curtailment)	Pros	Cons
Option 1: No negative price provision	N/A Seller receives Fixed Price for all volumes produced by the Reference Fleet.	Least impact on Seller's Fixed Price, with no economic curtailment.	- Buyer exposed for negative prices down to Market Price Floor. - Projects are not price responsive, which may drive needs for other system stability measures. - Exposure to possible gaming risks from portfolio players with assets in the index but not subject to an ESEM agreement (cross-subsidisation).
Option 2a: \$0/MWh price floor	-1*(Fixed Price + LGC/REGO Price)	- Projects remain price responsive, whilst still receiving stable cash-flows. - Buyer exposure is capped at Fixed Price.	- Will result in some impact on Seller's Fixed Price, to account for forecast economically curtailed volumes. - Exposure to possible gaming risks from portfolio players with assets in the index but not subject to an ESEM agreement (cross-subsidisation).
Option 2b: \$0/MWh price floor, volume knock-out at -ve LGC/REGO price	Between 0-> -ve LGC/REGO price -1*(Fixed Price + LGC Price) Below -ve LGC/REGO price -1*(LGC/REGO Price)	Same as 2a, with the benefit of providing further protection for the Buyer beyond LGC/REGO price.	Same as 2a, with increased complexity and Buyer uncertainty.
Option 3: \$0/MWh volume knock-out	-1*(LGC/REGO Price)	- Projects remain price responsive. - Buyer exposure is capped at Fixed Price. - Least risk of gaming/perverse outcomes.	- Will likely result in significant impact on Seller's Fixed Price, to account for forecast economically curtailed volumes. - Makes Buyer cashflows more volatile, impacting bankability.

Issue 1: Illustrative Settlement Example

The below high-level analysis shows the Seller's net position (Spot Revenue + LGC Revenue + RRPPA Payment) under increasingly negative Floating Prices for the three options under consideration. Note: the Fixed Price is for illustrative purposes and does not reflect ASL's view of possible future auction outcomes.

Fixed Price: \$150/MWh	LGC Price: \$5/MWh	Plant Capacity: 100 MW	Contract Capacity: 100 MW	Reference Production Index: 75%	Seller Contribution to Index: 10%
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Key Takeaways:

1. Option 1 (no provision) is most beneficial for Sellers as they receive the Fixed Price for Reference Fleet volumes irrespective of the Floating price.
2. Across all three options, the Seller is incentivised to minimise volumes during negative price periods (solid lines show higher net positions than dotted lines).
3. The Reference Fleet may contain projects with a range of incentives (e.g. some may have offtakes with no negative price provisions) and hence buyers may be exposed to the behaviour of the fleet in all scenarios bar Option 3 (volume knock-out).
4. Given the capped contribution to the Reference Fleet, the Seller curtailing to 0MWh does not materially impact settlement quantity in Option 1,2.

Issue 1: Consultation Feedback

Feedback summary

- Stakeholders broadly agreed that negative pricing requires explicit treatment, however the was no clear consensus on the preferred mechanism.
- Stakeholders framed the design choice as a trade-off between financing outcomes and market efficiency.
- Stakeholders supporting a price floor argued improved bankability, revenue stability.
- Stakeholders supporting a volume knock out argued it better preserved market signals, was fairer for buyers.
- Stakeholders noted that both price floors and volume knock-outs are used in market today.

Stakeholder Group	General Position
Renewable developers	Generally favoured \$0 floor
Independent power producers	Generally favoured \$0 floor
Investor groups	Generally favoured \$0 floor
Retailers	Generally favoured volume knock-out
Buyers	More likely to support volume knock-out

Key Quotes

Redacted to remove quotes provided within confidential submissions.

Issue 2: Price Cap

Issue Overview

The WG's current preferred position is that a Price Cap should be included within the RRPPA to manage Seller's basis risk under adverse scenarios (e.g. high price and/or high volume).

The setting of the price cap shifts risks between buyers and sellers. A lower price cap makes the product less valuable to the buyer (but at a likely lower Fixed Price), however a higher price cap makes the product more valuable to the buyer (at a likely higher Fixed Price).

A \$600 cap was strongly supported by Sellers in the consultation but is a point of contention for buyers of the product – with several large energy users/retailers sharing concerns that they would be left exposed and required to buy firming to cover their position. Submissions also raised whether the cap should be set at \$600 or set to align with the APC.

Relevant Contract Evaluation Criteria

1. **Bankable** – a price cap protects the Seller from exposures from outages during high price events.
2. **Efficient at allocating risks** – a price cap impacts risk allocation between buyer and seller.
3. **Attractive for sellers and buyers** - a price cap impacts risk allocation between buyer and seller.
4. **Adaptable for future market** – a price cap should be resilient with current a range of future market outcomes.
5. **Simple to value** – presence of a cap impacts ability to value the swap.
6. **Complementary within a set** – a cap may impact the need for of and interaction with other products.

Further Information / Analysis

Please see the following slides:

1. Summary of stakeholder feedback received.

Options Identified

Option Title	Pros	Cons
Option 1: No price cap	• Most valuable to buyers • May reduce need for firming	• May favour portfolio players who can defend their position more effectively than independent producers. • Increase Fixed Price to cover risk.
Option 2a: \$600/MWh price cap (current position)	• Aligns with Strike Price of the firming product • Aligned with Administered Pricing Cap (today)	• No hedge for buyers for prices up to \$600 • Alignment with APC may drift over time.
Option 2b: Cap set to the APC	• Aligns with Strike Price of the firming product (TBD) • Aligned with Administered Pricing Cap (enduring)	• As per 2a, with the complexity of referencing an external index and reduced certainty for buyers/sellers.
Option 3: \$300/MWh price cap	• Aligned with most commonly trading firming product today in \$300 cap.	• Least valuable to buyers -> drives buyer demand for \$300 firming. • Much more likely to bind than \$600 cap.

Issue 2: Consultation Feedback

Feedback summary

- Stakeholder feedback regarding the inclusion of a \$600 price cap diverged significantly between buyers (against) and sellers (generally in favour of).
- Sellers in favour of a cap noted that the RRPPA could expose sellers to liabilities up to the MPC when an individual project underperforms the Reference Fleet during a high-price interval. Sellers noted that this exposure is difficult to quantify, hedge and finance over a long contract tenor.
- Opposition was concentrated among buyer-side stakeholders and certain gentailers. These respondents generally did not dispute that sellers could face material high-price exposure. Their objection was that the proposed solution automatically transfers that risk to the RRPPA buyer without demonstrating that the transfer is necessary, efficient or cost-effective.

Key Quotes

Redacted to remove quotes provided within confidential submissions.

Issue 3: Treatment of Hybrid Projects in RPI

Issue Overview

Hybrids (in particular solar hybrids) represent a significant portion of the generation pipeline. Inclusion of output from hybrid projects in the Reference Fleet poses a risk in that it may result in a Reference Production Index that is no longer linked to the physical resource profile increasing basis risk for Sellers. Conversely hybrid projects may be able to bid into auction with a lower Fixed Price with flexibility to offer multiple services and hedge their exposures.

Numerous responses to the September 2026 consultation paper included concerns over how hybrid projects will be included in the RPI as a key concern.

Generally solar hybrid projects can be separated into DC and AC-coupled systems, where AC coupled systems have discrete inverters for renewable and storage components and DC-coupled systems share inverters between components. AC-coupled is the most common configuration for wind projects.

Whilst it has not been defined where Reference Fleet capacity and output would be measured, measuring capacity at DUID level would allow for the VRE component of AC-coupled systems to be separated.

Relevant Contract Evaluation Criteria

- 1. Bankable** – the treatment of hybrid projects within the Reference Production Index may impact project basis risk and bankability.
- 2. Operationally achievable** – the treatment of hybrid projects may impact the effort/difficulty in calculating the Reference Production Index.
- 3. Adaptable to future market** - the design choice could impact market direction and selection of efficient technologies/designs.

Further Information / Analysis

Summary of stakeholder feedback received.

Options Identified

Option Title	Pros	Cons
Option 1: No hybrid projects are included in Reference Fleet	- RPI maintains shape of regional technology profile. - Maintains ability to calculate using station level data.	RPI may drift from actual fleet over time if hybrids continue to form significant percentage of new projects – particularly for solar
Option 2: Hybrids are included where the VRE component has its own DUID.	RPI maintains shape of regional technology profile.	Required to measure all projects at DUID level – possible further complications in considering concentration thresholds
Option 3: Hybrids are included at station level (e.g. with storage)	- Reference Fleet tracks actual fleet. - Maintains ability to calculate using station level data.	- RPI shape loses regional technology profile. Significant basis risk. - Potential gaming risks

Issue 3: Consultation Feedback

Feedback summary

- Hybrid project treatment emerged as an unresolved design issue, particularly in relation to projects combining VRE with battery or long-duration storage behind a single connection point or DUID.
- Stakeholders generally supported allowing hybrid projects to participate across the ESEM contract suite, but considered that the current design does not yet explain how hybrid assets would be treated for tender eligibility, Reference Fleet membership, index calculation, or concurrent participation in multiple products.

Key Quotes

Redacted to remove quotes provided within confidential submissions.

Issue 4: Reference Fleet Entry and Exits

Issue Overview

The current term-sheet specifies that the '*Reference Fleet contains all Operational projects of the specified Technology within the specified NEM Region with a Nameplate Capacity of 30MW or greater*'. The WG agreed in WS3b that the Reference Fleet should be updated on an annual basis to reflect the impact of new projects.

The WG has not reached a detailed position on what defines whether a project is '*Operational*', including consideration of entrants and exits. **Several responses to the September 2026 consultation paper requested further detail with regards to how the updates to the Reference Fleet will be managed.**

If the definition of Operational does accommodate plants capable of producing less than their Nameplate Capacity whilst commissioning or those that have exited the market, the notional quantity of the swap for all projects with a RPPPA would be reduced, increasing basis risk. Dynamically updating the capacity of the Reference Fleet based on exits increases complexity.

Relevant Contract Evaluation Criteria

1. **Bankable** – the design of the Reference Production Index impacts basis risk and bankability.
2. **Operationally Achievable** – the design of the Reference Production Index impacts the ability for the entity producing the index to do so in a timely and accurate manner.
3. **Attractive for sellers and buyers** – treatment of entry/exits impacts attractiveness to buyers and sellers. Buyers are seeking a regional technology profile.
4. **Adaptable for future market** – the Reference Production Index must be resilient to changes to the Reference Fleet

Further Information / Analysis

Summary of stakeholder feedback received

Options Identified

Option Title	Pros	Cons
Option 1: New entrants added annually (once 'Operational' in Gen Info), exits trigger ad-hoc update (based on MT-PASA?)	Ensures Reference Production Index is not 'dragged down' for an extended period by the capacity of projects that have exited the market.	More complex to administer/determine Reference Production Index.
Option 2: New entrants and exits updated annually (once 'Operational' and 'Withdrawn' respectively on Gen Info)	Simpler to administer/determine Reference Production Index.	Risk that volume from any withdrawn projects within the year.

Issue 4: Reference Fleet Outages

Issue Overview

The current term-sheet specifies that the '*Reference Fleet contains all Operational projects of the specified Technology within the specified NEM Region with a Nameplate Capacity of 30MW or greater*'. The WG agreed in WS3b that the Reference Fleet should be updated on an annual basis to reflect the impact of new projects.

The WG has not reached a detailed position on what defines whether a project is '*Operational*', including consideration of outages. **Several responses to the September 2026 consultation paper requested further detail with regards to how the updates to the Reference Fleet will be managed.**

If the definition of Operational does not accommodate plants capable of producing less than their Nameplate Capacity for a period of time (due to outages), the notional quantity of the swap for all projects with a RPPPA would be reduced, exposing both the Seller and Buyer to volume risk within the Reference Fleet. Dynamically updating the capacity of the Reference Fleet based on exits significantly increases complexity and has the potential to introduce moral hazard risks (e.g. reporting outages during low wind periods).

Relevant Contract Evaluation Criteria

1. **Bankable** – the design of the Reference Production Index impacts basis risk and bankability.
2. **Operationally Achievable** – the design of the Reference Production Index impacts the ability for the entity producing the index to do so in a timely and accurate manner.
3. **Attractive for sellers and buyers** – treatment of commissioning/outage risk impacts attractiveness to buyers and sellers. Buyers are seeking a regional technology profile.
4. **Adaptable for future market** – the Reference Production Index must be resilient to changes to the Reference Fleet

Further Information / Analysis

N/A

Options Identified

Option Title	Outages Captured	Pros	Cons
Option 1: Reference Fleet capacity is determined based on nameplate capacity, updated annually (e.g. no outages)	No outages captured	• Significant less complexity in calculating the Reference Production Index. • More stable, predictable index.	• Individual project exposed to outages within the Reference Fleet.
Option 2: Reference Fleet capacity is updated [weekly] accounting for forecast outages (MTPASA?)	Planned outages or extended un-planned outages	• Captures some outage behaviour • Aligns with settlement period	• Requires frequent updating and reporting. • Some risk of moral hazard
Option 3: Reference Fleet capacity is determined per trading interval based on sum of available capacity (AWEFS data?)	Planned and unplanned outages	• Index tracks capacity of available fleet for each trading interval.	• Greatest risk of moral hazard • Most administratively burdensome and volatile.

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Shaping Product Key Issues



Summary of Key Issues

We have compiled a list of key issues for resolution, based on stakeholder feedback.

Ref	Title
01	Block Setting Approach
02	Daily Shaping Period

Issue 1: Dynamic Nomination Approach

Issue Overview

The setting of charge/discharge periods is a critical feature of the spread swap as it drives bankability for the seller and value of the product for the buyer. The WG's current position is to use day-ahead forecasts for Residual Demand to determine charge/discharge period in 30 minute blocks, with a maximum of two distinct blocks per day.

Stakeholders shared several concerns regarding the shaping product:

- (1) Concerns over accuracy of RD as a proxy for price in the future.
- (2) Concerns that a lack of certainty over when the blocks will be placed reduces the value of the hedge for buyers.
- (3) Concerns over whether the dynamic nomination approach impacts ability for use in the MMO.

Stakeholders also acknowledged that there was a trade-off between optimised spreads and certainty of when hedges would be in place.

Relevant Contract Evaluation Criteria

1. **Bankable:** nominating charge/discharge periods must not impose requirements that may not be able to be reasonably complied with (e.g. insufficient charging time).
2. **Operationally achievable:** the nomination approach must be able to be operationalised by the Buyer, Seller and party that publishes the nominated blocks.
3. **Attractive for buyers and sellers:** the nomination approach must provide a hedge for buyers but be able to be complied with by sellers.
4. **Adaptable to future market:** the nomination approach must be resilient to a range of future market dynamics.

Further Information / Analysis

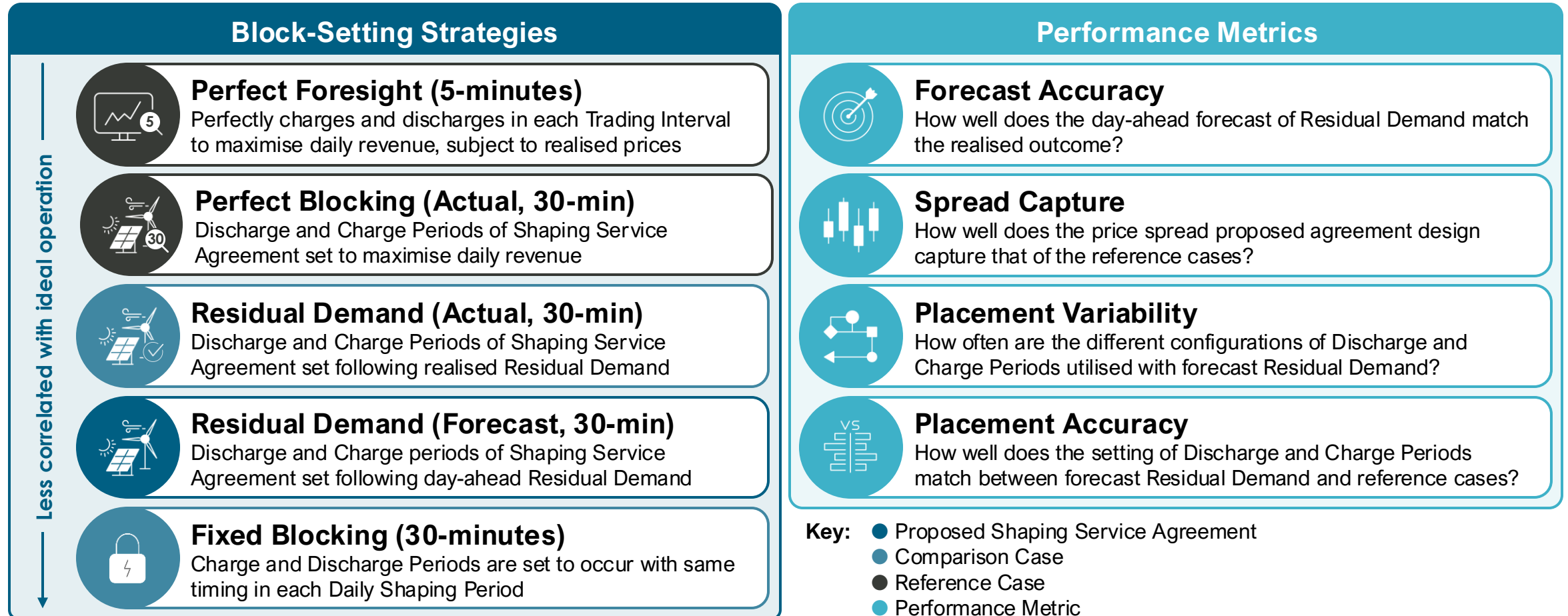
1. ASL historical analysis in progress – see methodology on following slides.

Options Identified

Option Title	Pros	Cons
Option 1: Day-Ahead Residual Demand (current preferred)	More effective hedge against intra-day spreads for buyers.	- More complex. - Buyers and sellers do not know more than a day-ahead which time-blocks will be hedged.
Option 2: Time-Block(s) determined weekly based on prevailing data (e.g. 4-week trailing)	- Less complex than day-ahead nominations and aligns with weekly settlement. Allows for capturing of seasonal trends. - Buyers understand their hedge position for the upcoming week.	Spread capture may be poorer in comparison to dynamically day-ahead set charge/discharge periods.
Option 3: Fixed Time-Block(s) determined at Auction	Simplest to operationally implement.	Spread capture significantly poorer in comparison to dynamically set charge/discharge periods.

Issue 1: Testing the Dynamic ToD Swap

ASL is progressing with historical modelling to test a range of block-setting approaches.



Issue 2: Daily Shaping Period

Issue Overview

The current Product Sheet proposes that each Daily Shaping Period will commence at the Trading Interval ending at 09:05 and finish at the Trading Interval ending at 09:00 the following day. The Product Sheet also specifies that Charge and Discharge Periods will be published at 16:00 for the following Daily Shaping Period.

The Residual Demand signal proposed to be used in determining Charge and Discharge Periods is calculated using AEMO's 30-minute pre-dispatch forecast. This forecasts to the end of the next market day (which begins/ends at 04:00 Eastern Standard Time) and is updated every half-hour. Each half-hourly update adjusts the forecast for the remaining portion of the Market Day, until a new day-ahead forecast is published. We understand that the first pre-dispatch forecast for a new Market Day is published at approximately 12:30, shortly after the receipt of initial bids and offers for the next trading day.

Relevant Contract Evaluation Criteria

- 1. Operationally achievable:** the timing of daily shaping periods should enable buyers and sellers to manage their positions.
- 2. Attractive to sellers and buyers:** the timing of daily shaping periods should not detract from the accuracy of the ability to forecast charge/discharge periods that provide an effective hedge for buyers.
- 3. Adaptable to future market:** the timing of daily shaping periods should remain operationally achievable and attractive to buyer and sellers in a range of future electricity market scenarios.

Further Information / Analysis

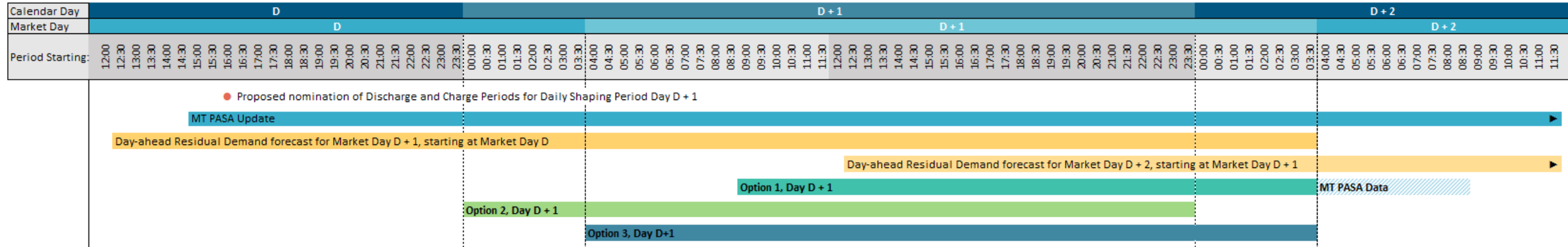
1. Illustration of daily shaping period options

Options Identified

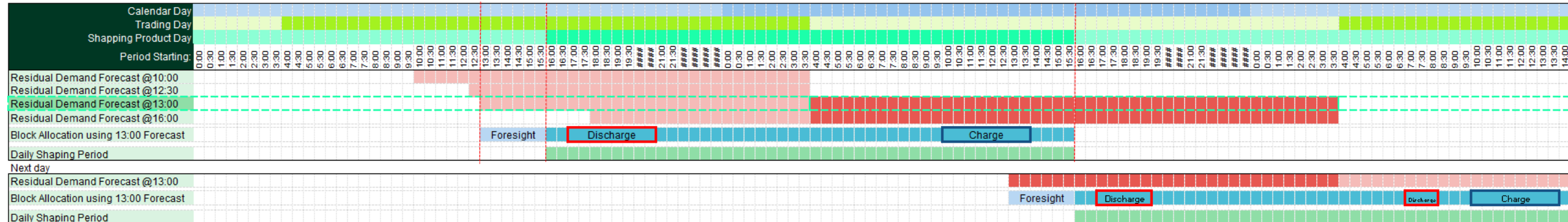
Option Title	Forecast Data	Nomination Time	Pros	Cons
Option 1: 09:05--09:00	PD and STPASA	16:00	Alignment with high-likelihood charging cycle (based on solar resource).	Requires a splice of two data sets, increases complexity.
Option 2: 0:05-0:00	PD	16:00	Aligns shaping periods with calendar days	For longer duration shaping products (e.g. 8 hours) – this may not be a period with very low likelihood of discharging.
Option 3: 04:05-04:00	PD	16:00	- Expected to be a lower demand period. - Alignment with NEM settlement day, streamlining settlement.	May require 24hr trading capability.
Option 4: 16:05-16:00	PD	13:00 (13:00 snapshot?)	Expected to occur prior to peak demand.	- Shorter notice period for Sellers to prepare for peak. - Possibility of discharge period near end of previous day (i.e. may require additional block setting logic/rules).
Option 5: Flexible trading days	PD	16:00	Reduced risk to Seller's as a result of overlapping charge blocks	Increased settlement complexity

Issue 2: Illustration of Options

ASL concept overview



WG member concept overview



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Firming Product Key Issues



Summary of Key Issues

We have compiled a list of key issues for resolution, based on stakeholder feedback.

Ref	Title
01	Cap Strike Price

Issue 1: Cap Strike Price

Issue Overview

The strike price is a key variable of the cap product. The \$300 cap has historically been traded in the greatest volumes across the NEM, however, capital and operating cost pressures faced by gas and pumped hydro projects limits the value that can be obtained below the cap price.

The WG selected a \$600 cap as the preferred product given that it allows projects with the ability to obtain greater merchant revenues, which should reduce the required premium and result in more efficient premiums. The \$600 cap also aligns with the Administered Pricing Cap (\$600/MWh), limiting cap payouts in the event of the Cumulative Price Threshold being breached.

Stakeholder feedback regarding the \$600 strike price was mostly favourable from Seller's, however, Buyers have raised concerns about product value and protection from moderate volatility events (e.g. \$500/MWh for 3 days). Stakeholders also raised concerns regarding changes to the APC over time.

Relevant Contract Evaluation Criteria

- 1. Bankability:** the strike price impacts likely project 'cap defending' run time.
- 2. Efficient at allocating risks:** the strike allocates exposure to volatility between the buyer and seller.
- 3. Attractive for sellers and buyers:** the strike should allocate the risks in a manner that is attractive to buyer and sellers.
- 4. Adaptable to the future market:** the strike should be resilient to cost inflation over the term of the contract.
- 5. Complementary within a set:** the strike should compliment the design of bulk, energy products as well as products available OTC or on exchanges.
- 6. Simple to value:** alignment with products available in the market support discovery of demand and buyer value.

Further Information / Analysis

N/A

Options Identified

Option Title	Pros	Cons
Option 1a: \$600/MWh	- Allows for greater 'headroom' under the strike for projects to capture merchant revenues, which may reduce required premiums. - No cap payouts under APC events. - Aligned with WG preferred option for RRPPA cap.	- Provides a hedge against more extreme volatility. - May incentivise shorter duration technologies over generators capable of long periods of continuous generation. - No cap payout during administer pricing may leave consumers exposed due to weaker incentive to generate.
Option 1b: Aligned to APC	Same as 1a, with additional benefit of no drift over time.	- Uncertainty for buyer and seller of hedge during non-APC events. - Risk that APC could decrease in future and impact SRMC headroom
Option 2: \$300/MWh	- Provides an effective hedge against moderate and extreme volatility. - Maintains liquidity in existing product.	- Likely requires more expensive premiums. - May disincentivise energy-limited technologies such as LDES, due to higher likelihood of prolonged exposures.

Issue 1: \$600 Cap – Stakeholder Feedback

Feedback summary

- Sellers were generally supportive of a \$600/MWh cap, whilst Buyers shared concerns regarding the value of the hedge provided.
- Supporters considered that a \$600/MWh strike preserved merchant revenues and in turn reduced premiums, as well as provided headroom above SRMC. Alignment with the APC was supported.
- Buyers argued that the \$600 strike leaves a substantial band of price exposure unmanaged. Buyers exposed to prices between \$300/MWh and \$600/MWh would receive no payment, despite potentially incurring material wholesale costs. A major concern was that a \$600/MWh cap may principally protect against brief and extreme price spikes rather than sustained periods of system stress.
- Some respondents noted that aligning the strike with the APC may reduce the value provided by providers able to sustain delivery over 8 hours and recommended retaining or introducing an additional \$300/MWh variant.
- Other respondents noted that the product alone may be insufficient to support investment in some technologies.

Key Quotes

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Themes emerged from the survey and pre-briefing sessions about leading implementation concerns

	Issues or concerns	Proposed approach to resolve or move forward
More information or analysis is needed in some key areas	- In some cases the issue is communications or information – e.g., explaining the logic for capping the RRPPA swap - Shaping is the product that has raised the most concerns based on bankability, forecast accuracy, asset degradation, settlement options, etc - There is no clear solution for hybrid projects – understanding split metering options would help	- Being clear on the logic for choices – e.g., caps provide material protection for generators but limited protection for users due to volume uncertainty – can assist with comms - Progress best possible ex-ante design on proposed terms - If material concerns cannot be sufficiently resolved, potential to consider in a subsequent phase with more detailed context - Dispatchable assets would distort the index and hybrids share a connection point – is there a mechanism for assets to be measured behind the meter on hybrid sites?
Targeted supplementary policy support is needed for FM	Force Majeure is a material issue but concerns focus on a few key types where supplementary support is likely to be most needed	Progress with the jurisdictions with the focus on protection for key themes – network outages, change of law and liquidity
Auction design will influence how the products operate	- Many aspects of auction design – timing, duration, tranche size, frequency, resale dates, recycling rules, MMO obligations, parcel size, etc – are not yet clear but will impact contract operations - The choice of trading platform or market type will impact participation, including via margin requirements	- Most design considerations are not yet known – importantly, interactions of proposed contract structures with design auction parameters will need to be reconsidered once more detail on the auction process is available - Platform type, liquidity considerations, concentration risk and margin or participation implications to be considered as part of implementation

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Implementation Issues



Summary of Stakeholder Feedback on FM

Feedback summary

- FM was one of the most significant and consistently raised issues across the consultation.
- Most Sellers considered that an additional mechanism would be required if the ESEM contracts are to support project-financed assets. These respondents generally accepted that asset-specific FM rights should not be inserted into the fungible derivatives sold to buyers, but argued that the resulting risk must be addressed through a separate, durable framework operating alongside the contracts.
- A smaller group, including some gentailers and buyer-side stakeholders, opposed additional relief or cautioned against arrangements that would transfer project-specific risks to buyers or consumers. These stakeholders considered FM to be an ordinary commercial risk that sellers should manage through insurance, reserves, contracting levels and portfolio arrangements. They also emphasised that recycled ESEM contracts must remain enforceable through physical outages if they are to be standardised, fungible and useful as financial hedges.

Key Quotes

Redacted to remove quotes provided within confidential submissions.

As discussed previously, BMS discussions confirms that the financial contract structure of the proposed ESEM designs would offer little FM protection

Event Category	Description	Insurable?	Residual Risk Holder
Natural catastrophe	A natural hazard such as a bushfire, flood, cyclone, severe storm or earthquake that damages the site or prevents operation.	YES – Project Assets Only	Insurer / Project Owner
Disease and biosecurity	A human, animal or plant disease outbreak, pest plague, or the public health or quarantine orders that follow, that damages equipment or prevents site access.	NO	Project Owner
Network or communications failure	Unplanned failure of third-party transmission, distribution or telecommunications infrastructure that prevents export, import or remote control of the project.	PARTIAL	Insurer (to extent of contingent coverage), then Project Owner
AEMO intervention	AEMO suspends the market or applies administered pricing.	NO	Project Owner
Government or regulatory action	A regulator or government revokes an approval, issues a shutdown order, or uses emergency or acquisition powers over the project, other than because of seller breach.	NO	Project Owner
Malicious attack	A deliberate cyber or physical attack, including terrorism and sabotage, on the project or the infrastructure it depends on.	PARTIAL	Terrorism – Insurer / Project Owner Cyber – Project Owner (if Cyber not purchased)
Conflict and civil disorder	War, riots, protests, blockades or industry-wide strikes that prevent access to or operation of the site. (Includes - War, invasion, act of foreign enemies, hostilities (whether war has been declared or not), civil war, rebellion, riot, embargo, trade or custom restriction, revolution, insurrection or military or usurped power or martial law)	PARTIAL	Largely Project Owner
Supply chain disruption	Supply failures, sanctions, export controls or import bans that prevent the purchase, delivery or servicing of critical equipment.	NO	Project Owner / Contractors
Third-party and site events	An off-site incident such as a fire, explosion or vehicle impact, or an unforeseen discovery of cultural heritage, contamination or ordnance, that damages or halts the site.	PARTIAL	Insurer (to extent of contingent coverage), then Project Owner
Other (Typical FM Inclusion)	Ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste resulting from the combustion of nuclear fuel;	NO	Project Owner

Source: BMS Insurance

Conclusion – Insurance Market Perspective

What insurance can do

- ✓ Physical damage to project assets at the project site can generally be insured
- ✓ Resulting loss of revenue / profit can be insured (subject to policy terms and limits)
- ⚠ Coverage generally depends on insured physical loss/damage

What insurance can not effectively cover

- ✗ Market price risk
- ✗ Resource variability (though **parametric insurance** may be available)
- ✗ Regulatory intervention
- ✗ Network constraints and curtailment (absent physical damage – no more remote than 1st non-owned substation)
- ✗ Long-term systemic ESEM performance risk

Insurance can address certain asset-level risks, but is not designed to absorb broader market-wide or systemic ESEM exposures.

‘Straw person’ for Force Majeure risk discussion based on feedback – presented for discussion

SUMMARY OF THE ISSUE

FORCE MAJEURE PROTECTION

Moving from physically-backed contracts (PPAs) to financial contracts materially reduces force majeure protections for generators

Some form of supplementary policy support has been raised as a threshold issue

OPT 1: Extensive coverage

Introduce comprehensive FM coverage in parallel with the ESEM
High costs for users, may go further than now, inefficient risk allocation

OPT 2: Cover only threshold issues

Introduce supplementary cover only for key threshold issues
Network outages, change of law and liquidity for outages as focus

OPT 3: Limited protection

No supplementary protection with reliance on private insurance markets
Potential material barrier to bankability and contract support



‘STRAWPERSON’ FOR DISCUSSION

COVER ONLY THRESHOLD ISSUES

Some FM protection is required for project to proceed, and is also a threshold issue for ESEM support for some stakeholders

Limiting to the most material issues preserves efficient risk allocation

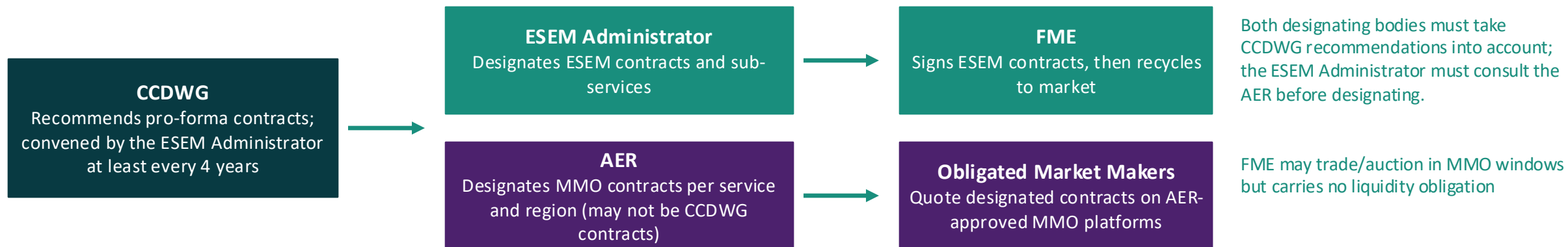
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Market making obligation and contract recycling

Briefing on proposed MMO and contract recycling
NEL and NER amendments

ESEM contract recycling and MMO overview



	Firming	Bulk energy	Shaping	Contract design tests (NEL)
Service definition	Capacity dispatching continuously for at least 8 hours (MW)	Renewable generation eligible under the Guarantee of Origin Act (MWh)	Bidirectional units or voluntary scheduled resources (MW and MWh)	Derivative arrangement; standardised per service or sub-service; fungible and tradeable; able to trade on an MMO platform; consistent with market conventions
Day-one MMO contract	Cap	Baseload swap (combined bulk energy and shaping)		

MMO: when it applies and to whom

AER-administered, per service and per region

Step	What happens
Designate	AER designates pro-forma contracts for a service in a region
Assess (quarterly)	Liquidity tested against objective, forward-looking criteria to be outlined in the MMO Guidelines
Ministers consulted	Upon breach Ministers have 20 business days to opt out
MMO notice	AER names contracts, volumes, spreads and Obligated Market Makers; liquidity period up to 3 years
Vary or revoke	AER can vary, or revoke once liquidity is sufficient, after consulting Ministers

Obligations

Obligated Market Maker	Firming: group capacity above a set % of the regional average (prior two quarters). Bulk and shaping: AER methodology to be outlined in MMO Guidelines, having regard to ability to earn spot revenue to fund payments under a designated contract.
Non-Obligated Participant	Other Market Participants, trading within MMO volume limits
Voluntary Market Maker	Anyone else, subject to conditions; energy traders not automatically obligated

- Starts in SA (firming caps), replacing the FERM liquidity obligation.
- Not proposed for Tas or Qld unless they opt in.
- AEMC to review MMO performance alongside the reliability standard and settings review.

What Obligated Market Makers must do

The liquidity obligation

Post simultaneous bids and offers for designated contracts, within the bid-offer spread and in compliant parcel sizes, on approved platforms. Meet a minimum volume each MMO trading period, traded or resting for a minimum time. Quote forward for 11 quarters from the next full quarter.

Bid-offer spreads

Spreads may differ by service, region and tenor. They must still drive trading in high-price periods while letting market makers manage risk.

Platforms

Exchanges or OTC platforms approved against 13 criteria, including real-time public prices, adequate credit arrangements and fair access. The AER may cap the number of platforms.

'Straw person' for Market Making Obligation risk discussion based on feedback – presented for discussion

SUMMARY OF THE ISSUE

SUITABILITY FOR MARKET MAKING OBLIGATIONS

Contracts designed by the working group should be suitable both to support market entry and as the basis for future Market Making Obligations

POS 1: Contracts are optimal

Contracts are ideal candidates to underpin MMO

Ex-post settlement and interoperability of bulk and shaping are not ideal

POS 2: Contracts are workable

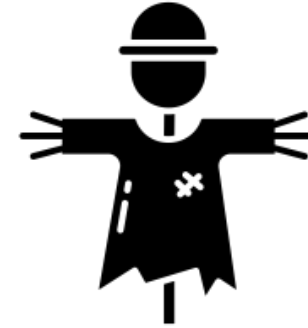
Contracts can be used for market making obligations

Can be used to effectively make markets if required

POS 3: Contracts are not suitable

Contracts not compatible or suitable with the MMO

Potential material barrier to implementing the MMO with this contract design



'STRAWPERSON' FOR DISCUSSION

CONTRACTS ARE WORKABLE

View that contracts are broadly suitable but not the design that optimises only for MMO

Interoperability of shaping and bulk energy are a barrier

ESEM Contract Co-design: Workshop 4 Agenda

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The final report for the ESEM Contract Co-design Working Group will sets out the Working Group's process, findings and recommended contract set

1

Foundations and Terms of Reference

Context for the review, the Terms of Reference given to the working group, and how the group was constituted and run

2

Evaluation criteria

The attributes contracts were tested against, why each mattered, how each was measured and what the assessment showed

3

Option set

The range of contract structures considered across bulk energy, shaping and firming, and how each product works

4

Contract assessment

Performance of each option against the framework, and the rationale for the products carried forward

5

Selected contract designs

Specification of the recommended contracts, including index construction, settlement mechanics and fallback options

6

Implementation considerations

Procurement quantities and forecasting, auction structure, tenor and duration, contract recycling and force majeure

7

Next steps and future work

Open questions, the workplan to resolve them, and how the co-design process should be formalised

8

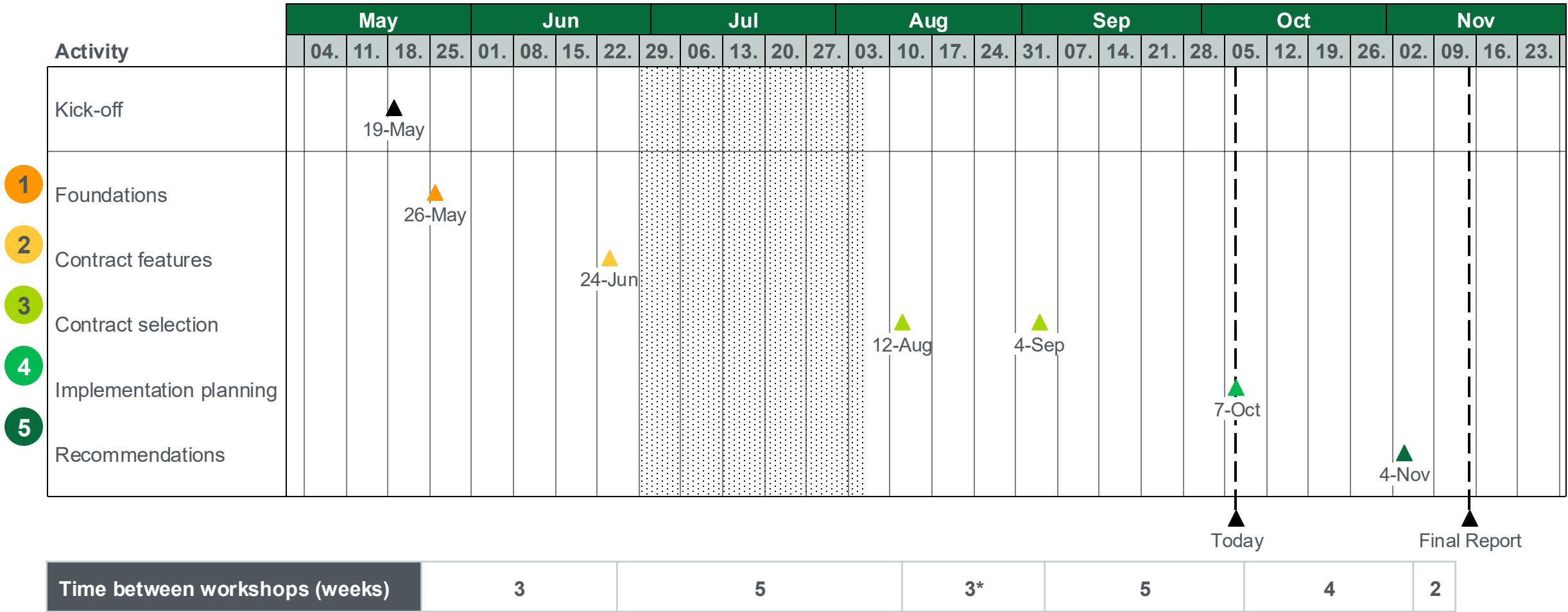
Appendices

Including key explanatory materials used in workshops or results from modelling or analysis

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Timeline



Notes: * Only if additional workshop is scheduled



ESEM Contract Co-design Workshop 4

Friday 4 September 2026, 8:45am – 5:00pm

L.E.K. Consulting

Level 26, 88 Phillip Street, Sydney 2000

For any queries please contact:

- Logistics: Ryan Wilson, ryan.wilson@dcceew.gov.au
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Jeff Forrest, j.forrest@lek.com