Electricity contract co-design

Workshop 5 discussion materials

4 November 2026



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ESEM Contract Co-design: Workshop 5 Agenda

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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

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Competition and Consumer law obligations and information sharing

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

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

Source: ASL – Contract Co-design Working Group – Meeting Communication Protocols

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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

Source: NEM review contracts co-design group pilot – Workshop 1

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Workshop 5 will focus on final design considerations and final report drafting

1

Workshop 1: Foundations

- Establish how we are going to work as a team
- Ensure Working Group participants have a strong foundational understanding of potential contract models
- Define required analysis to drive choices

2

Workshop 2: Contract features

- Workshop contract options and assess against evaluation criteria
- Identify and articulate pros / cons of different alternatives
- Determine any further analysis required

3 **3B**

Workshop 3: Contract selection

- Re-visit evaluation of contract options with any additional evidence
- Determine ‘short list’ of preferred contract options

4

Workshop 4: Implementation planning

- Workshop and align on preferred implementation approach
- Address high-priority in

5

Workshop 5: Recommendations & final report

- Align on final report recommendations
- Issue final report

This Workshop

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Objectives for Workshop 5

Workshop 5 will focus on residual issues and reviewing the draft Final Report:

Bulk Energy	1	Update the Working Group on cash flow modelling results
	2	Assess index design implications from analysis of negative price performance
	3	Confirm final contract settings
Shaping	4	Confirm final position on daily shaping intervals and contract settings
Portfolio	5	Assess contract performance as a portfolio based on updated analysis
Other issues	6	Review the Final Report draft and align on any outstanding issues
	7	Review the proposed approach to force majeure relief for ESEM Contracts
	8	Reflections on the co-design process
	9	Update on contract co-design Phase 2 plans

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Issue Analysis – Index Collapse during Negative Price Intervals



Introduction

Issue Overview

- The Reference Fleet contains all Operational projects of the specified Technology within the specified NEM Region with a Nameplate Capacity of 30MW or greater.
- This means the Reference Fleet will contain projects with offtake agreements with a range of contractual obligations (no negative price provisions/$0 price floor/$0 volume knock out, green certificates swept/retained).
- The WG has identified a $0/MWh price floor as the preferred negative price provision, subject to further consideration of the interaction with the index.
- The WG (and some stakeholders during consultation) raised concerns about the potential for the Reference Fleet to curtail its output during negative price intervals.
- The WG identified that if the Reference Production Index were to 'collapse' (e.g. curtail en masse) this could, in effect, result in a similar effect to contract payments as the $0 volume knockout (i.e. $0 contract payments).

Relevant Contract Evaluation Criteria

1. **Bankable:** index design should seek to maintain basis risk within bankability thresholds.
2. **Operationally achievable:** the index design should be implementable and should not provide an incentive to generate at times that do not create economic value.
3. **Efficient at allocating risks:** the index design should efficiently allocate negative price and volume risks between buyers and sellers.
4. **Adaptable to future market:** the index design should be resilient to changes in negative price dynamics in the future.
5. **Simple to value:** the index design should not inhibit buyers and sellers in determining a price.

Further Information / Analysis Provided

1. High-level analysis of generator incentives
2. Baringa supplied background information

Key Findings:

1. The CG's analysis of generator incentives suggests that **rational bidding behaviour of the Reference Fleet could trend towards –LGC price over time**. **No clear financial incentive for the Reference Fleet to curtail above –ve LGC price was identified.**

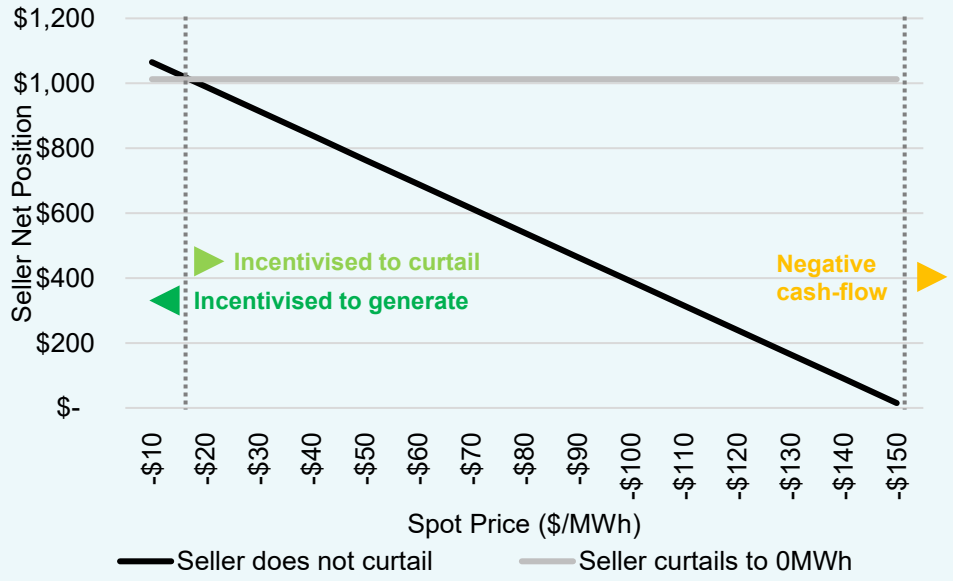
Generator Incentives

- During times of high variable renewable energy output (i.e. zero SRMC generation):
  - The **spot price** at which demand is met **is a function of generator contracting incentives and LGC price**, but
  - The **volume of renewable generation dispatched is determined by demand**. The Reference Production Index is therefore impacted by the ratio of renewable generation capacity to demand.
  - At the Reference Fleet level, **contract incentives will change where an RRPPA sits in the bid stack** and the market price at which demand is met rather than the volume of renewable energy dispatched.
- ASL's analysis of semi-scheduled wind and solar bidding in YTD 2026 indicates that **~ 70% of bids are between 0-$200/MWh**. The remaining 30% may be comprised largely of projects with legacy PPA's.

Category	Overview of Profit Maximising Incentives < $0/MWh
Reference Fleet (RRPPA)	• As shown (right), the Seller's net cash-flow is > $0 when the Floating Price is above *-1*(Fixed Price + LGC Price)*. • **The Seller's highest net cashflows are achieved where their exposure to negative prices is less than the LGC and contract revenues lost due to curtailing their output. Rational profit maximising bidding behaviour for projects with a RRPPA is to bid in at this value or above.**
Reference Fleet (non-RRPPA)	• Where a non-RRPPA project curtails its volume to 0MWh, it's net cash-flow is assumed to be $0/MWh. • The Reference Fleet is assumed to currently contain a mix of generators with RoP PPA, LTESA and CISA provisions. Over time, it is assumed that there is unlikely to be a significant portion of the Reference Fleet with agreements without any negative pricing provisions. Furthermore, over time, the proportion of the Reference Fleet that is comprised of projects that may bid down to –ve Fixed Price will decrease (as LTESA's and CISA's expire). • **The long-term anticipated behaviour is for Reference Fleet volumes to decrease below –ve LGC, resulting in prices generally exceeding –ve LGC.**

Illustrative example – RRPPA Seller

Fixed Price: $150/MWh	**Seller contribution to index**: 10%	**Contract capacity**: 120MW
LGC Price: $2/MWh	**Reference Projection Index**: 75% (seller matched)	**Contracted percentage**: 100%



	Incentivised to generate				Incentivised to curtail	
Floating Price	**$0**	**-$5**	**-$10**	**-$15**	**-$20**	**-$25**
Seller does not curtail						
Spot Revenue	$-	-$38	-$75	-$113	-$150	-$188
LGC Revenue	$15	$15	$15	$15	$15	$15
Contract Revenue	$1,125	$1,125	$1,125	$1,125	$1,125	$1,125
Total Revenue	**$1,140**	**$1,103**	**$1,065**	**$1,028**	$ 990	$ 953
Seller curtails to 0MWh						
Spot Revenue	$ -	$ -	$ -	$ -	$ -	$ -
LGC Revenue	$ -	$ -	$ -	$ -	$ -	$ -
Contract Revenue	$1,013	$1,013	$1,013	$1,013	$1,013	$1,013
Total Revenue	$1,013	$1,013	$1,013	$1,013	**$1,013**	**$1,013**

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Shaping Analysis Findings

Question	Findings
Core contract structure questions	
How closely do pre-dispatch forecasts of Residual Demand correlate with realised Residual Demand? How does selection of Daily Shaping Period impact this correlation?	• Pre-Dispatch **Residual Demand forecasts appear to be correlated with actual Residual Demand**. • **The Pre-Dispatch forecasts exhibit materially greater correlation to realised Residual Demand than ST-PASA forecast**, supporting the WG's decision to move away from a 9am-9am Daily Shaping Period that would require the ST-PASA forecast. • No material differences in the correlation between Pre-Dispatch forecasts using 4pm-4pm and 4am-4am shaping periods were observed for mainland states.
How accurately do Pre-Dispatch forecasts of Residual Demand hedge daily high/low price *periods*?	• **Pre-Dispatch Residual Demand was found to nominate charge/discharge/idle blocks aligned with Perfect Blocking in ~73% of intervals**, averaging across all durations and regions analysed. Placement accuracy for mainland states was materially higher than for TAS.
How effectively do Charge/Discharge Periods nominated using Pre-Dispatch Residual Demand forecasts capture daily *price spreads*?	• **On average for all durations and regions considered, the Pre-Dispatch Residual Demand forecast captured ~75% of price spreads earned under revenue-maximising Perfect Blocking, which was ~ 7% higher than Fixed Blocking approach**. The spread capture effectiveness was materially higher for the mainland states than for TAS. • No material differences in the spread capture between 4pm-4pm and 4am-4am shaping periods were observed for mainland states.
How variable is the historical distribution of high/low price periods?	• **The distribution of charge and discharge periods varied significantly between NEM regions**, which was attributed to their generation mix and demand profiles. Placement of Discharge Periods over the morning peak was least likely in QLD in comparison to the other states.
Additional design questions:	
What is the risk of back-to-back Discharge Periods across the end and start of the Daily Shaping Periods? How does selection of Daily Shaping Period impact this risk?	• Historical analysis: **04:05-04:00 was observed to result in lower frequency of undefendable blocks than 16:05-16:00 for all NEM regions, except SA.** During boundary periods with undefendable blocks, **the average spot price was found to be materially lower for 04:05-04:00 than 16:05-16:00**. • Forward looking analysis: **16:05-16:00 was observed to result in lower frequency of undefendable blocks than 04:05-04:00** for all states.

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For discussion

Confirming the Daily Shaping Period Decision

Issue Overview

The draft consultation Product Sheet proposed Daily Shaping Periods of 09:05-09:00. Consultation feedback identified that the proposed timing may cause logistical challenges and identified two alternative options: 16:05-16:00 and 04:05-04:00.

During WS4, the WG agreed to change the preferred position for the Daily Shaping Period to 16:05-16:00 (with nominations at 13:00 on the same calendar day) on the basis that the approach requires only Pre-Dispatch data and the evening peak is at the start of the period and the forecast accuracy should be greater, subject to review of further analysis.

This analysis pack provides further detail regarding the trade-offs in selecting a Daily Shaping Period for the WG's consideration.

Relevant Contract Evaluation Criteria

1. **Operationally achievable:** the timing of Daily Shaping Periods should enable Buyers and Sellers to efficiently defend 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.

Options Identified

Option Title and Period	Nomination Time	Pros	Cons
Option 1: 09:05-:09:00	16:00	• Stakeholder feedback and this analysis (see Forecast Accuracy – Average correlation, by month charts on Pages 10-19) indicates other Options 2 and 3 are preferable due to the accuracy of the combined PD and STPASA forecast versus the alternative options.	
Option 2: 16:05-16:00 (current preferred position)	13:00	• Griffith's forward-looking analysis identified significantly less frequent physically undefendable periods than for Option 3 (see Page 25), for all NEM regions, aligning with the historical observed trend for SA (see Page 23). • The shorter timeframe between the nomination time and evening peak period was hypothesised by the WG to result in forecasting the timing of the evening peak with greater accuracy than Option 3, however, a material difference was not identified in ASL's historical analysis. In a higher VRE system, this forecasting accuracy benefit could become more material.	• Shorter notice period for Sellers to prepare for peak (noting sellers can track PASA forecasts days prior). • Does not align with current market settlement periods.
Option 3: 04:05-04:00	16:00	• ASL's historical analysis identified significantly less physically undefendable discharge periods than Option 2 for all NEM regions except SA (see Page 23). • ASL's historical analysis also indicated that the average Spot Price during identified undefendable periods was materially less than Option 2, across all NEM regions with observed undefendable periods (see Page 23). • Alignment with NEM settlement day. • 12hrs + notice period prior to commencement of period.	• A longer timeframe between the nomination time and evening peak period was hypothesised by the WG to reduce forecasting accuracy for this period, however, a material difference was not identified in ASL's historical analysis.

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Possible Approach to Force Majeure Relief for ESEM Projects

The following slides show a possible approach. None of the following slides should be taken as a guarantee that any such approach will be included in the finalized NEM review package, and any such decision remains solely at the discretion of relevant ministers.

This information is provided solely for the purposes of facilitating CCDWG's development of contracts per the Terms of Reference.

Force Majeure: Rationale for Contractual Relief

Why FM coverage is required

- ESEM contracts are financial derivatives with no link to physical plant.
  - This means that incorporating relief against project-specific FM risks into an ESEM contract is not possible.
- A number of risks facing electricity projects are functionally unhedgeable over a 10-20 year timeframe (the length of an ESEM derivative contract).
  - This is because private insurance markets either do not provide any coverage for these risks, or coverage is only available over a short timeframe (e.g. 1 year).
- Without an FM coverage mechanism, new projects will face a range of downside risks they are unable to hedge, making bank finance highly expensive or unattainable.

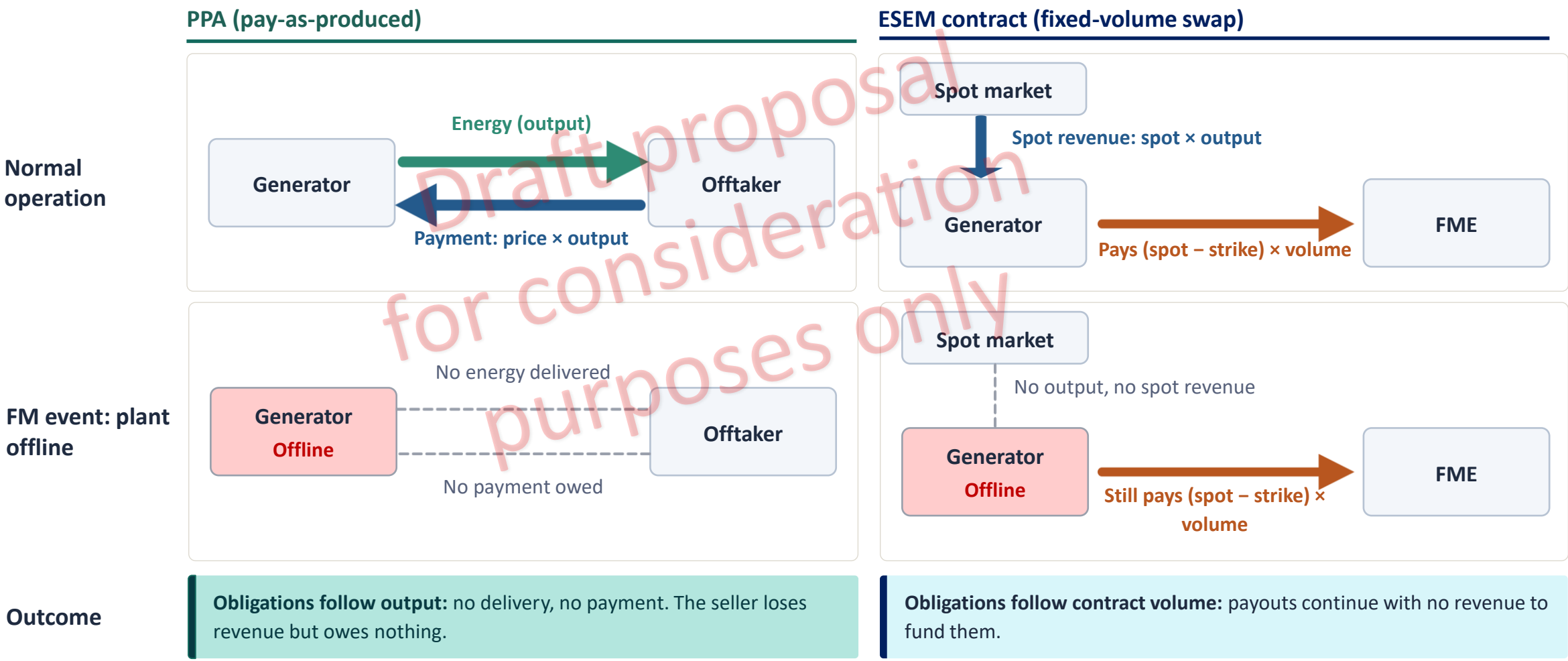
Draft proposal for consideration purposes only

Potential principles to underpin approach

1. **Focus only on risks that cannot be reasonably addressed by the market**
   - i.e. not covering the damages to a physical asset from a bushfire or flood, as these can reasonably be privately insured, but covering contract exposures resulting from a bushfire, as these cannot be privately insured.
2. **Maintain risk management signals as much as possible**
   - i.e. Excluding grid congestion, as projects should be incentivised to locate in areas less likely to suffer from congestion.
3. **Only provide relief against a contracted obligation.**
   - i.e. No coverage that pays the project in an FM event; rather the project is simply relieved of its obligation to pay the FME.

FM relief: PPA versus ESEM contracts

A PPA's obligations decline with the plant's output, an ESEM contract's obligations do not



Draft proposal for consideration purposes only

Possible FM definition (not settled; for consideration and discussion only)

Proposed definition of Project Force Majeure Event

A Project Force Majeure Event is an event or circumstance, or combination of events or circumstances, occurring after plant commissioning that:

a) is not within the reasonable control of the plant operator; and

b) the plant operator could not have avoided, mitigated, remedied, or overcome through the exercise of reasonable care and good industry practice

Proposed exclusions to Project Force Majeure Events

The following do not constitute a Project Force Majeure Event:

a) reduced ability to export or import caused by a binding network limit under system-normal conditions (all network elements in service at normal ratings);

b) ordinary variability or reduced availability of the energy resource (such as wind or sun);

c) changes in prices or market conditions or non-dispatch arising from the project's own bids or offers;

d) lack of funds, financial hardship, failure or inability of any person to pay any sum due and payable, or the inability of the plant operator (or any of its Related Bodies Corporate) to obtain financing or insurance or to profit or achieve a satisfactory rate of return;

e) a shortage or delay in delivery of materials, consumables, equipment or utilities required by the plant operator or any failure by plant operator to hold sufficient stock of spares, except to the extent it is itself caused by a Project Force Majeure Event;

f) a malfunction, temporary unavailability, breakdown or failure of the plant operator's equipment, property or assets caused by normal wear and tear;

g) any event or circumstance arising due to a failure by the plant operator, any of its Related Bodies Corporate or any of their respective employees, agents or subcontractors to take reasonable measures to maintain, secure and protect any equipment, property or asset in accordance with good industry practice, except to the extent it is itself caused by a Project Force Majeure Event;

h) strikes, industrial disputes or other industrial actions or disruption that only affect the plant operator or any group of companies of which it is a part;

i) failure by any person to perform an obligation, except where such failure is caused by any event or circumstance that, if such event or circumstance had happened to the plant operator, would have been a Project Force Majeure Event.

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Operation of Proposed FM Approach

Prior to ESEM auction	During ESEM auction	During possible FM event
ESEM guidelines specify FM event coverage and precise operation of FM regime ESEMA develops FM Contract pro-forma	Alongside ESEM derivative and PDA, FME enters into FM Contract with project (must stay with DUID and ESEM Contract) FM Contract is an option specifying volume of ESEM derivatives that the FME must sell to project if FM event occurs at original ESEM auction price.	When an FM event occurs, project proponent alerts FME, and FM Contract option is exercised (not optional), removing the project's ESEM contract exposures over the period. If the FM Event is partial, FM Contract sizing will be partial to match. FM Contract option continues to roll forward (e.g. weekly) until FM event has concluded. Project alerts FME when FM event has ended. FME (consulting ESEMA, AEMO, AER, etc) retrospectively checks FM event was genuine and may impose washups under the contract to ensure contract was not operating during FM (especially where contract would have been in-the-money for FME).

Draft proposal for consideration purposes only

FM regime: residual risks and retained incentives

Key risks to FME/consumers

1. *Open market positions*
   If the contract was already recycled, the FME must replace cover or carry spot exposure
2. *Events coincide with price spikes*
   Bushfires, floods, and network failures could occur during, or produce, scarcity pricing
3. *Duration*
   Exposure lasts as long as the event, bounded only by the length of the forward market

Partially offset by

Symmetric relief
The FME keeps any gains the proponent would have made; benefitting if FM events occur during low-price periods, or if wholesale prices are generally below a project's ESEM contract strike price

Lower bid prices
Smaller risk premiums should reduce ESEM auction prices

Narrow scope
Exclusions and a focus on un-insurable only limits potential claims

How proponent incentives are maintained

Physical losses stay with the project
No compensation for plant damage or lost revenue, so projects still insure and protect assets

Tight definition
Wear and tear, poor maintenance, supply delays, and system-normal congestion are not covered

Proportionate, time-limited relief
Relief matches affected capacity only, ends with the event, and requires efforts to restore capacity ASAP

No cherry-picking
Automatic exercise removes upside as well as downside during the event

Verification and wash-up
False or overstated claims are reversed with interest

Draft proposal for consideration purposes only

ESEM Contract Co-design: Workshop 5 Agenda

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Report Page Turn

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CONTRACT CO-DESIGN WORKING GROUP

Final Report of the 2026 Working Group

November 2026



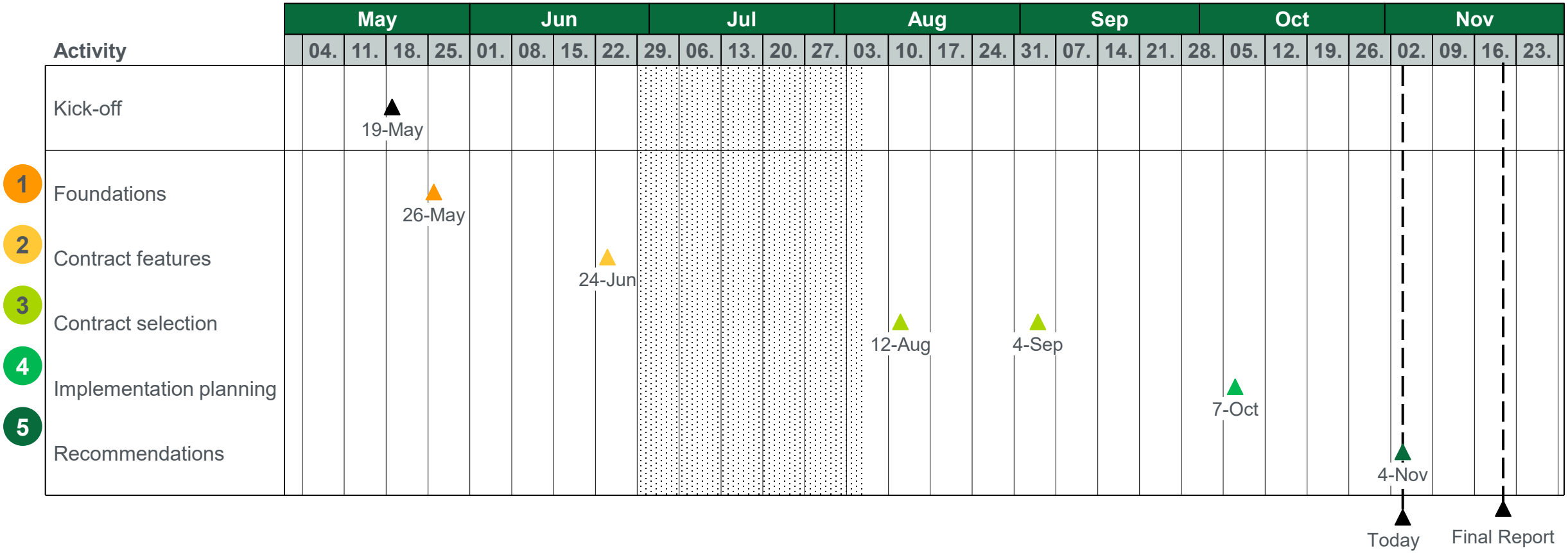
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Timeline



Time between workshops (weeks)	3	5	3*	5	4	2

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
- Workshops: Lucy Carter, l.carter@lek.com
  Jeff Forrest, j.forrest@lek.com