

Meeting Agenda

Meeting Title:	WEM Investment Certainty Review Working Group (WICRWG)			
Date:	Thursday 16 July 2026			
Time:	9:30 AM – 11:30 AM			
Location:	Online via TEAMS			
Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda - Conflicts of interest - Competition Law	Chair	Noting	5 min
2	Meeting Apologies/Attendance	Chair	Noting	5 min
3	Benchmark Technology Review 2026	RBP/Jacobs	Discussion	100 min
4	General Business	Chair	Discussion	5 min
	Next meeting: 23 July 2026			

Please note, this meeting will be recorded.

Competition and Consumer Law Obligations

Members of the MAC (**Members**) note their obligations under the *Competition and Consumer Act 2010* (**CCA**).

If a Member has a concern regarding the competition law implications of any issue being discussed at any meeting, please bring the matter to the immediate attention of the Chairperson.

Part IV of the CCA (titled “Restrictive Trade Practices”) contains several prohibitions (rules) targeting anti-competitive conduct. These include:

- (a) **cartel conduct**: cartel conduct is an arrangement or understanding between competitors to fix prices; restrict the supply or acquisition of goods or services by parties to the arrangement; allocate customers or territories; and or rig bids.
- (b) **concerted practices**: a concerted practice can be conceived of as involving cooperation between competitors which has the purpose, effect or likely effect of substantially lessening competition, in particular, sharing Competitively Sensitive Information with competitors such as future pricing intentions and this end:
 - a concerted practice, according to the ACCC, involves a lower threshold between parties than a contract arrangement or understanding; and accordingly; and
 - a forum like the MAC is capable being a place where such cooperation could occur.
- (c) **anti-competitive contracts, arrangements understandings**: any contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition.
- (d) **anti-competitive conduct (market power)**: any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition.
- (e) **collective boycotts**: where a group of competitors agree not to acquire goods or services from, or not to supply goods or services to, a business with whom the group is negotiating, unless the business accepts the terms and conditions offered by the group.

A contravention of the CCA could result in a significant fine (up to \$500,000 for individuals and more than \$10 million for companies). Cartel conduct may also result in criminal sanctions, including gaol terms for individuals.

Sensitive Information means and includes:

- (a) commercially sensitive information belonging to a Member’s organisation or business (in this document such bodies are referred to as an Industry Stakeholder); and
- (b) information which, if disclosed, would breach an Industry Stakeholder’s obligations of confidence to third parties, be against laws or regulations (including competition laws), would waive legal professional privilege, or cause unreasonable prejudice to the Coordinator of Energy or the State of Western Australia).

Guiding Principle – what not to discuss

In any circumstance in which Industry Stakeholders are or are likely to be in competition with one another a Member must not discuss or exchange with any of the other Members information that is not otherwise in the public domain about commercially sensitive matters, including without limitation the following:

- (a) the rates or prices (including any discounts or rebates) for the goods produced or the services produced by the Industry Stakeholders that are paid by or offered to third parties;
- (b) the confidential details regarding a customer or supplier of an Industry Stakeholder;
- (c) any strategies employed by an Industry Stakeholder to further any business that is or is likely to be in competition with a business of another Industry Stakeholder, (including, without limitation, any strategy related to an Industry Stakeholder’s approach to bilateral contracting or bidding in the energy or ancillary/essential system services markets);
- (d) the prices paid or offered to be paid (including any aspects of a transaction) by an Industry Stakeholder to acquire goods or services from third parties; and
- (e) the confidential particulars of a third party supplier of goods or services to an Industry Stakeholder, including any circumstances in which an Industry Stakeholder has refused to or would refuse to acquire goods or services from a third party supplier or class of third party supplier.

Compliance Procedures for Meetings

If any of the matters listed above is raised for discussion, or information is sought to be exchanged in relation to the matter, the relevant Member must object to the matter being discussed. If, despite the objection, discussion of the relevant matter continues, then the relevant Member should advise the Chairperson and cease participation in the meeting/discussion and the relevant events must be recorded in the minutes for the meeting, including the time at which the relevant Member ceased to participate.



Department of
**Energy and Economic
Diversification**

WEM Investment Certainty Working Group

Benchmark Technology Review
2026 – Technology Longlist

Acknowledgement of Country

The Government of Western Australia acknowledges the traditional custodians throughout Western Australia and their continuing connection to the land, waters and community.

We pay our respects to all members of the Aboriginal and Torres Strait Islander communities and their cultures, and to Elders past and present.

Agenda

Item		Time	Presented by
1	Welcome and introductions	5 min	Chair
2	Scope and approach	10 min	RBP/Jacobs
3	Technology longlist	10 min	RBP/Jacobs
4	Evaluation against requirements	10 min	RBP/Jacobs
5	Cost calculation methodology	10 min	RBP/Jacobs
5	Next Steps	5 min	Chair

Scope and Approach



Scope

- Under ESM Rule 4.16.11, the Coordinator must determine the Benchmark Technologies within six months of a revised ESR Duration Requirement being published in the ESOO.
 - In the 2026 ESOO, the ESR Duration Requirement was increased from 6 hours to 7 hours, so the Coordinator is reviewing the Benchmark Technologies as per the ESM Rules.
 - The Coordinator must determine the Benchmark Technology for:
 1. Peak Capacity; and
 2. Flexible Capacity.
 - The selected Benchmark Technologies should:
 - provide efficient investment signals to ensure system security and reliability; and
 - ensure that customers don't overpay for the desired system security and reliability.
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Approach

1. Establish a long list of technologies
2. Pre-filter long list based on technology readiness and credibility for service by 2029
3. Create potential configurations of remaining technologies for assessment
4. Identify the requirements that must be met to provide each capacity service
5. Filter configurations based on service requirements
6. Identify cost data (based on the existing BRCP determination approach) for each configuration to deliver each capacity service
7. Identify additional data for determination of net Cost of New Entrant (CONE) assessment
8. Conduct market modelling to inform Benchmark Technology and Gross/Net CONE proposals
9. Develop Benchmark Technology and Gross/Net CONE proposals
10. Consultation and Determination

EPWA has completed steps 1-5 and is currently undertaking step 6.



Technology longlist



Technology longlist (1/2)

Technology	Evaluation 2025	Evaluation 2026
OCGT Heavy duty (Industrial SCGT) (a) Gas fuelled (b) Distillate fuelled	Re-evaluated based on the availability of higher efficiency units	Re-evaluated based on the availability of higher efficiency units
OCGT Aeroderivative (Aero SCGT) (a) Gas fuelled (b) Distillate fuelled	Evaluated	Evaluated
High Efficiency Gas Turbine (HEGT) (LMS100PB) (a) Gas fuelled (b) Distillate fuelled	Evaluated	Evaluated
Reciprocating engine (a) Gas fuelled (b) Distillate fuelled	Evaluated	Evaluated
CCGT with once through steam generator (OTSG)	Replaced by alternative drum-type boiler configuration using bypass stacks which is a proven and common technology.	Superseded by drum SG CCGT on following slide (per 2025 evaluation)

Technology longlist (2/2)

Technology	Evaluation 2025	Evaluation 2026
CCGT Drum SG – Gas fuelled	Evaluated	Evaluated
Fuel cell	Not likely to be competitive for this duty in this cycle	Not likely to be competitive for this duty in this cycle
Lithium based BESS	Evaluated	Evaluated
Vanadium based BESS	Not likely to be competitive for this duty in this cycle	Not likely to be competitive for this duty in this cycle
Sodium based BESS		Still First-Of-A-Kind (FOAK) at present. Not included
Pumped storage	Excluded	Excluded
Solar thermal	Not likely to be competitive for this duty in this cycle	Excluded
Solar PV	Not competitive due to low allocation of capacity credits per MW of plant capacity	Not competitive due to low allocation of capacity credits per MW of plant capacity
Wind	Not competitive due to low allocation of capacity credits per MW of plant capacity	Not competitive due to low allocation of capacity credits per MW of plant capacity

Candidate configurations

	Industrial SCGT			Aero SCGT			CCGT		Recip.		Stor.
	2x GT13E2	2x SGT5-2000E	2x GE 9FA.04	4x LMS100PB	6x LM6000PF -SPRINT	12x LM2500 G4 DLE	2x GT13E2 2+1 w/. bypass stacks	1x GE 9FA.04 1+1 ss	12x Wartsila med speed	24x Jenbach. med speed	BESS
Gross MW	346.2	353.0	523.9	367.4	268.4	386.3	500.6	399.2	220.5	249.3	
Net MW	341.2	347.8	516.5	356.2	264.1	380.2	489.3	389.5	217.4	244.3	200
# network connections	2	2	2	2	1	2	2	1	1	1	1
Single contingency loss, MW	170	174	260	178	264	190	326	390	217	244	200
HR, net, LHV kJ/kWh	9,771	10,057	9,609	8,720	8,979	9,392	6,818	6,319	7,868	7,882	
Land Ha (excl switchyard)	3.4	3.4	10	2.0	3.0	12	4.0	4.0	2.0	2.5	6.4 (TBA)
Technical life	35	35	35	35	35	35	35	35	35	35 ¹⁷	20
Economic life (assumed)	25	25	25	25	25	25	25	25	25	25	15
BRCP life	15	15	15	15	15	15	15	15	15	15	15

Performance at 41°C, 20% RH, clean-as-new

Evaluation against requirements



Peak Service requirements

The candidate configurations are assessed against the Peak Service requirements here, and for the additional requirements of the Flex service on the following slide.

	Industrial SCGT*			Aero SCGT*			CCGT*		Recip.*		Storage		
	2x GT13E2	2x SGT5-2000E	2x GE 9FA.04	4x LMS100PB	6x LM6000PF-SPRINT	12x LM2500 G4 DLE	2x GT13E2 2+1 w/. bypass stacks	1xGE 9FA.04 1+1 ss	12x Wartsila med speed	24x Jenbacher med speed	6h BESS	7h BESS	8h BESS
Single contingency < 340 MW	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
7-hour rating (storage)	-	-	-	-	-	-	-	-	-	-	✗	✓	⁷ / ₈ cap

* Each of these options is evaluated separately with each of the following fuel supply alternatives:

- Certified on gas, gas fueled with a fat lateral to provide the necessary 14-hour fuel supply
- Certified on distillate, but assume gas is primary with a skinny lateral

Flex service requirements

	Industrial SCGT*			Aero SCGT*			CCGT*		Recip.*		Storage		
	2x GT13E2	2x SGT5-2000E	2x GE 9FA.04	4x LMS100PB	6x LM6000PF-SPRINT	12x LM2500 G4 DLE	2x GT13E2 2+1 w/. bypass stacks	1xGE 9FA.04 1+1 ss	12x Wartsila med speed	24x Jenbacher med speed	6h BESS	7h BESS	8h BESS
Peak service compliance	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	⁷ / ₈ cap
Min stable load 46% for non-intermittent	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
Ramp rate 3%/min up & down	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dispatch time, 30 mins	✓	✓	✓	✓	✓	✓	² / ₃ cap	✗	✓	✓	-	-	-

Proposed configuration shortlist

The resulting eligible shortlisted candidate configurations proposed are as follows:

	Industrial SCGT*			Aero SCGT*			CCGT*	Recip.*		Storage	
	2x GT13E2	2x SGT5-2000E	2x GE 9FA.04	4x LMS100PB	6x LM6000PF-SPRINT	12x LM2500 G4 DLE	2x GT13E2 2+1 w/. bypass stacks	12x Wartsila med speed	24x Jenbacher med speed	7h BESS	8h BESS
Peak Service	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7/8 cap
Flex Service	✓	✓	✓	✓	✓	✓	2/3 cap	✓	✓	✓	7/8 cap

Cost calculation methodology



Data sources

Preferred sources of data for cost calculation are:

- CSIRO GenCost (directly or via AEMO's IASR) – the latest final or draft version at the time of the analysis.
- Thermoflow where GenCost does not cover a technology configuration (Gas turbines and reciprocating engines):
 - Select parameters in the Thermoflow suite to suit the WEM typical build
 - Any manual adjustments should be minimised, disclosed, and use public domain cost examples to the extent practical
 - Configuration localisations (such as secondary fuel capability and storage, water treatment arrangements, inlet air cooling etc) should be done within Thermoflow to maximum extent
 - Localisation of construction cost adjustments (if appropriate) should be limited to only the construction related elements (such as labour) and using public domain sources (e.g. AEMO IASR and Rawlinsons etc.) to maximum extent practical
- Costs of BESS are based on the IASR values with 6- and 7-hour BESS being interpolations of 4- and 8-hour BESS costs

Calculation basis

- The cost estimation is to be the expected value of a generic build cost.
 - Should include appropriate allowances for scope completeness (growth) so that the cost is the best-estimate for the complete plant
 - Should not include a risk contingency to reduce the risk of the cost being exceeded to below some low-risk probability
- The BRCP is a hypothetical project for commissioning only a few years into the future
 - No plant can actually be developed and built in such a timeframe unless it is already significantly through the development/construction process
 - The best estimate for the costs of a plant committed (FID) on the day of the assessment and escalated (using expected CPI) to the nominal dollars of the BRCP date

Thermal plant configuration (1)

- Using the Thermoflow suite (GTPro and PEACE) with the following configurations:
 - Rating point at 41°C dry bulb, coincident RH of 20% and site elevation of 100m. Net plant output is used.
 - 330kV connection
 - Site and ancillary plant per Jacobs' expectations:
 - Soft ground, buildings as appropriate (GT and HRSG outdoors, steam turbines and water treatment plants indoors)
 - No gas compression on-site
 - Inclusive of emergency diesel genset, DCS, site firefighting and fire water reserve, fuel tanks etc
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Thermal plant configuration (2)

- Configuration-specific adjustments include:
 - E class CCGT (2xGT13E2) modelled as multi-shaft and with bypass stacks. This would allow $\frac{2}{3}$ rds of capacity to be dispatched in ~30 mins (full capacity in ~60 mins if the plant has been offline less than 8hours)
 - F class CCGT (1x9FA) modelled as single shaft without bypass stack
 - Configurations based on numerous units (aero-derivatives and recip) based on shared generator transformer groups
 - Using Thermoflow's regional factors for Australia and converted to AUD at current FX rate
 - Using Thermoflow suite latest version – v33 (released March 2025)
 - Contractor's soft costs replaced by a fixed \$/kW value across the options (with a separate and higher allowance for CCGT)
 - Owner's cost allowances have been applied as a 10% allowance in all cases.
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Additional costs

Pre-FID development	Nominal allowance of \$20M is added to the capital cost of each project.
Land (PS)	Power station areas are estimated by comparison against actual power stations of similar configuration in W.A. or the NEM. The land cost per hectare is derived from the latest values published in the most recent ERA review. This is for the power station facility only.
Electrical connection	A 330 kV connection teed into one circuit using a breaker-and-a-half, two diameters arrangement assuming a dedicated switchyard. 2km of 330kV circuit length between the powerplant and the switchyard.
Gas connection – compressed lateral case	• A dedicated lateral also serving as the (gas) fuel store. 36-inch (900dia) pipeline of 15 MPa MAOP with length to contain 14 hours of fuel at a minimum pressure appropriate for each gas turbine/engine and a lateral operating pressure of 13 MPa. • Compression capacity (in MW) is based on compressing from 3 MPa to 15 MPa x the flow required for each configuration over 14 hours, being provided in (3x24-14) hours of compression time. • Pipeline and compressor station costs per GHD's report for AEMO, escalated to \$2026 • Land area based on the size of a typical station of 5 Ha • Nominal allowance for facilities of \$2M
Diesel fuel storage	For the cases with distillate as the relevant fuel, tankage for two days of operation for fuel and demineralised water. A demin. water plant is assumed included.
Water (external infrastructure)	No other specific costs for other external infrastructure are added.

Fixed Operations and Maintenance costs

Plant FOM	Technology specific from IASR
Transmission connection asset maintenance	0.5%/y of connection capex
Transmission NUOS	\$6,000/MW/y (To be updated)
DBNGP capacity	Est. MDQ x 365 x DBNGP tariff – applied for gas-fuelled configurations
Gas connection FOM	0.25%/y of connection capex where relevant
Corporate overheads etc	\$1.09M/y (To be updated)
Insurance adjustment	0.3% x plant capex
Site security	\$160k/year (To be updated)
Rates	\$180k/y (To be updated)
Working capital	30-day payment cycle under contracts (and hence working capital for FOM x 30days) plus fuel inventory, each calculated using the WACC

Other Parameters

WACC	10.47% used in 2025 calculations per ERA's then draft determination Section 4.6
Escalation	2.5%/y from date of calculation to date in 2029 that the calculation is to apply to
Tilt	Not applied
Amortisation period	15 years applied to all technologies in discussion with EPWA
M factor	$(1+WACC)^{0.5} - 1$. An allowance for IDC

Next steps



Next steps

1. Identify cost data (based on the existing BRCP determination approach) for each configuration to deliver each capacity service
2. Identify additional data for determination of net CONE assessment
3. Conduct market modelling to inform Benchmark Technology and Gross/Net CONE proposals
4. Develop Benchmark Technology and Gross/Net CONE proposals
5. Consultation and Determination

Next working group meeting on 6th August to discuss draft Benchmark Technology and Gross/Net CONE proposals.





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Thank-you