

7 October 2026

Energy Matrix Group Pty Ltd
ABN 38 160 254 311

Level 6, 186 St Georges Terrace Perth WA 6000
PO Box Z5538 Perth WA 6000

(08) 9228 1930
enquiries@energymatrix.com.au

Coordinator of Energy

Department of Energy and Economic Diversification
By email: energymarkets@deed.wa.gov.au

SUBMISSION – 2026 BENCHMARK TECHNOLOGY REVIEW DRAFT DETERMINATION

RE: Draft Determination for Consultation

Energy Matrix Group (EMG) welcomes the opportunity to respond to the Coordinator of Energy's Draft Determination for the 2026 Benchmark Technology Review (**Draft Determination**). EMG commends the Department of Energy and Economic Diversification (**DEED**) for publishing the configuration workbook alongside the Consultation Paper. It has allowed EMG to test the proposals directly, and the figures in this submission are derived from that workbook.

1. Summary

EMG supports retaining a gross cost of new entry (CONE) approach (Proposal B). EMG does not support Proposal A as currently costed.

Two assumptions materially understate the cost of the proposed E-Class simple cycle gas turbine (**SCGT**)¹ relative to the 7-hour battery energy storage system (**BESS**), and together they determine which technology is selected:

- **Turbine capital costs** are based on superseded pricing and make no allowance for the supplementary cost of securing turbine delivery in time for the assumed 1 October 2029 commissioning date.
 - *EMG recommends all capital costs be updated to at least the CSIRO GenCost 2025-26 Final Report values and GPG capital costs specifically be adjusted using market-tested pricing no more than one quarter old, with an explicit expedited procurement allowance to secure a timely turbine delivery slot.*
- **Gas transport** – the dual fuel configuration is treated as gas-fired for its design, market modelling, CONE assessment and emissions profile, but is costed with no firm gas transport at all. Firm transport is a fixed and necessary cost; the benefits of the proposed operating strategy of certifying on distillate with preference to run on gas cannot be achieved without an allowance for transport reservation. The fall-back position of running on distillate does not satisfy the pricing or environmental limbs of the State Electricity Objective (**SEO**).
 - *EMG recommends that provision be made for a minimum firm transport reservation of 50% of the peak transport requirements.*

Adopting EMG's recommendations for turbine capital costs and gas transportation reservation could increase the proposed dual fuel facility cost from \$344,893/MW/yr to \$483,818/MW/yr, exceeding the EMG updated 7-hour BESS cost of ~\$474,134/MW/yr. These corrections result in **the 7-hour BESS becoming the lower-cost technology**. EMG therefore asks that the Coordinator re-evaluate the ranking of technologies before the Final Determination is made.

¹ Sometimes alternatively known as an Open Cycle Gas Turbine (**OCGT**).

Consultation question	EMG response
1. Do stakeholders agree with the proposed Benchmark Peak Technology?	No – not as costed
2. Do stakeholders agree with the proposed Benchmark Flexible Technology?	No – not as costed
3. Do stakeholders agree with retaining a gross CONE approach?	Yes – EMG supports Proposal B

2. EMG overview

EMG is one of Western Australia's most established gas trading and energy supply specialists, with 35 years' experience in energy markets. EMG offers a comprehensive scope of wholesale trading and retail supply, gas management services and energy consulting, and is establishing a presence in the WA electricity market.

EMG manages gas operations, wholesale supply, transport and storage for 35 WA gas market participants, and established and operates the gasTrading Spot Market™. EMG's position in the WA gas market includes:

- **4th largest** buyer and seller of gas in WA
- **~45%** of all gas in WA is operationally managed by EMG
- **>40 PJ/year** (average of 110 TJ/day) of gas traded
- **>100 TJ/day** of contracted pipeline capacity, primarily on the Dampier to Bunbury Natural Gas Pipeline (DBNGP)
- **Gas supply agreements with the majority of producers in WA**
- **Positions in both of WA's gas storage facilities** (Mondarra and Tubridgi)

This submission draws on EMG's direct experience of how fuel supply for gas-power generation (GPG) and comparable flexible loads are contracted and optimised in the market.

3. Assumed turbine capital costs do not reflect the market in which the benchmark technology would be procured

3.1. The base capital cost is out of date

The gas turbine market (and indeed the GPG equipment market in general) is experiencing unprecedented levels of demand, driven primarily by the power requirements of new data centres globally. This demand is outpacing manufacturing supply capability, driving extended delivery times and rapid step changes in price. CSIRO *GenCost 2025-26 Final Report* (published July 2026) notes that gas turbine costs have increased for the past four consecutive years and ongoing demand is projected to continue to increase cost in the near term.²

The capital costs used in the Draft Determination are based on outdated information:

- The capital cost for BESS has been sourced from the superseded CSIRO *GenCost 2025-26 Consultation Draft* (published December 2025, with prices as of July 2025).³
- The power plant cost for every thermal configuration is taken from the Thermoflow suite, version 33, released in March 2025, and escalated by CPI only. DEED acknowledges

² CSIRO *GenCost 2025-26 Final Report*, p 35.

³ DEED has sourced capital costs from AEMO's *2026 Inputs, Assumptions and Scenarios Report (IASR)* which itself sources data from the superseded CSIRO *GenCost 2025-26 Consultation Draft* (published December 2025), which in turn sources its capital cost data primarily from the GHD *2025 Energy Technology Cost and Technical Parameter Review* which reports prices as of July 2025.

that the Thermoflow cost database "is not tailored to latest Australian conditions and may itself be lagging current market prices."⁴

EMG considers that all capital costs should at least be updated in line with the CSIRO *GenCost 2025-26 Final Report* (published July 2026). However, noting the considerations listed below, EMG recommends further adjusting GPG values using market-tested pricing no more than one quarter old.

- In the time between publication of the CSIRO *GenCost 2025-26 Consultation Draft* and *Final Report*, GPG capital costs in particular increased substantially:
 - For turbines, by **more than 11%**
 - By comparison, 4 and 8 hour duration batteries increased by **less than 3%**.
- The CSIRO *GenCost 2025-26 Final Report* was based on consultation completed in February 2026, and so the reported turbine pricing is already lagging.
- Turbine prices continue to rise rapidly. GE Vernova (leading turbine manufacturer) reported more than a **20% increase** in turbine pricing between Q4 2025 and the end of Q2 2026, with **equipment orders more than doubling in Q2 2026**.⁵

To illustrate the materiality of these cost increases, EMG employed the DEED workbook and methodology to estimate the impact on proxy Benchmark Reserve Capacity Price (**BRCP**) of the cost changes between the *GenCost Consultation* and *Final* reports.

Technology	Increase in GenCost Pricing - Consultation to Final (%)	Increase in Proxy BRCP (\$ / %)
OCGT (large GT)	11%	~\$30k / 7%
OCGT (small GT)	11%	~\$50k / 8%
BESS (6 hr)	3%	~\$10k / 2%
BESS (7 hr)	3%	~\$10k / 2%

The impact of turbine capital costs is material, noting again that the *Gencost Final Report* is now outdated considering the pace of cost growth in turbines. EMG therefore considers that use of CSIRO *GenCost 2025-26 Consultation Draft* and March 2025 Thermoflow cost data risks substantially underestimating the cost of deploying new GPG.

EMG recommends that DEED sources current GPG costing information that is no more than one quarter old, ideally informed by market soundings with turbine manufacturers or consultancies with direct knowledge of recent pricing.

3.2. The capital costs should include the cost of securing timely delivery of turbines

The Draft Determination defines its capital cost as "the best estimate ... for the costs of a plant committed (Final Investment Decision) on the day of the assessment", for commissioning by 1 October 2029.⁶ A developer reaching Final Investment Decision today for a 2029 commercial operation date requires turbines to be delivered in 2028.

DEED recognises that "it is presently difficult to obtain an aeroderivative unit for delivery before 2030". Heavy-duty frame turbines face the same constraints. Accordingly, EMG recommends that the capital cost should include a pricing uplift reflecting the exceptional procurement effort required to secure a timely production slot in a sold-out market. This uplift may represent the cost to purchase an earlier delivery slot from a third party with an existing turbine order.

The uplift should acknowledge that data centres are a key driver for turbine demand, and that this class of buyer appears to value schedule over capital cost. The premium for a near-term slot is therefore likely to be material and could be informed by market soundings or consultancies with direct knowledge of recent pricing in the secondary market.

⁴ DEED, 2026 Benchmark Technology Review – Draft Determination for Consultation, Appendix B.1

⁵ [GE Vernova 2Q 2026 Financial Results & Outlook](#)

⁶ DEED, 2026 Benchmark Technology Review – Draft Determination for Consultation, Appendix B.1 and section 2.5.

4. Firm gas transport is a fixed cost of the benchmark facility

4.1. Inclusion of fixed transportation costs is necessary to achieve the SEO

In making a determination of the Benchmark Technology,⁷ the Coordinator must have regard to the SEO⁸ “to promote **efficient investment** in, and **efficient operation** and use of, electricity services for the **long-term interests of consumers of electricity** in relation to:

- (a) the quality, safety, **security and reliability** of supply of electricity; and
- (b) the **price** of electricity; and
- (c) the environment, including **reducing greenhouse gas emissions**” (emphasis added).

EMG agrees with DEED that a distillate-only facility is not a credible Benchmark Technology, for the reasons DEED provides:

- Real-Time Market prices “will increase significantly every time a distillate only plant is dispatched”, contrary to the pricing limb of the SEO.
- It would be inconsistent with the environmental limb of the SEO.⁹

DEED instead proposes a dual fuel facility certified on distillate “with preference to run on gas when practical”, and excludes any gas transport reservation on the basis that “any cost related to the plant operation on gas would be part of its variable costs and the cost for that would be recovered through the Real-Time Market (opportunistic or from the broader Market Participant portfolio) rather than be charged to the Reserve Capacity Mechanism (**RCM**).”

EMG does not consider it credible to expect a dual fuel facility to operate predominantly on gas without reserving any firm gas transportation (which is virtually entirely a fixed cost). Without firm gas transport provision, the proposed dual fuel facility could risk:

- Power and gas system security and reliability, contrary to limb A of the SEO, if gas overrun is sustained for a prolonged period, running down linepack and reducing pipeline pressure; or
- Running predominantly on distillate, contrary to limbs B and C of the SEO.

These points are elaborated on in the sections below.

In order to appropriately balance all three limbs of the SEO, EMG submits that provision should be made for **at least 50% firm gas transportation reservation** in the fixed O&M costs.

4.1.1. Non-firm transport is not available at the scale or at the times required

If the proposed dual fuel facility truly does not intend to procure firm gas transport capacity, it must obtain transport opportunistically from other DBNGP users with excess transport. The proposed SGT5-2000E SCGT, on a skinny lateral with no meaningful linepack storage, must draw its full-load fuel rate of 3,872 GJ/h (equivalent to approximately 93 TJ/day) from the DBNGP in real time. Accounting for the 120% Summer Hourly Peaking Limit in the T1 Reference Service terms,¹⁰ that is equivalent to approximately **77 TJ/day** of capacity at full power station output (almost **10% of total DBNGP full haul capacity**)¹¹.

The secondary gas transport market in WA is shallow and cannot routinely or practically supply opportunistic transport of that magnitude. Furthermore, the operational environment has fundamentally changed since SCGT was last the Benchmark Technology (2022), with gas

⁷ A notional new Facility of the technology type which is expected to be able to provide peak or flexible capacity at the lowest annual capital cost and annual fixed operating and maintenance costs.

⁸ Under the Electricity Industry Act, the Coordinator must have regard to the State Electricity Objective in carrying out a function under the Act.

⁹ DEED, 2026 Benchmark Technology Review – Draft Determination for Consultation, p 17.

¹⁰ DBNGP T1 Full Haul Reference Service Terms and Conditions, clause 10.1 (Hourly Peaking Limits).

¹¹ Based on 845 TJ/day capacity ([WA: Dampier to Bunbury Natural Gas Pipeline | AEMC](#)).

transportation becoming increasingly tight. As such, it is not credible to assume that a SCGT could run predominantly on gas without reserving transportation.

DEED's modelling indicates that the facility, as a low-efficiency peaker, will be dispatched in periods of high electricity demand. Those periods coincide with high gas demand from other GPG that sit below the proposed SGT5-2000E SCGT in the bid stack. The Australian Energy Market Operator (**AEMO**)'s 2025 WA Gas Statement of Opportunities (**GSOO**) projects rising SWIS GPG peak day gas demand and finds that "without appropriate mitigations the pipeline infrastructure is at risk of constraining gas delivery during periods of peak gas demand from 2029".¹²

Spare transport will therefore be least available precisely when the facility is needed and dispatched most.

EMG notes that the capacity factor of the facility and coincident gas demand of the GPG fleet was not published with the market modelling; doing so would allow the credibility of the proposed operating strategy, and its price and emissions consequences, to be more fully assessed.

4.1.2. Certification on distillate while intending to operate on gas creates avoidable and material risks for both electricity and gas system security

DBNGP over-run charges are significantly cheaper than burning distillate, meaning dual fuel generators have a strong commercial incentive to rely on non-firm transport rather than switch to distillate during peak periods. This behaviour has already driven the pipeline into minimum linepack and low-pressure conditions, requiring AEMO intervention.

AEMO recorded on 25 August 2025, "gas transport volumes needed by gas-fired generation exceeded contractual and nominated quantities, causing insufficient pressure on DBNGP... AEMO was required to intervene... to maintain Power System Security and the integrity of the gas network".¹³

Endorsing a benchmark that structurally relies on non-firm transport would amplify these risks as GPG grows, contrary to Limb A of the SEO.

4.1.3. Operation on distillate during peak electricity and gas demand periods will increase prices and emissions, contrary to Limbs B and C of the SEO

The Chair of the WEM Investment Certainty (**WIC**) Review Working Group has noted that there is a rule change under the Electricity System and Market (**ESM**) Rules being progressed that would force dual fuel facilities certified on distillate to actually run on distillate if the DBNGP is under stress as described above.¹⁴

Operation on distillate during peak electricity and gas demand periods will increase prices and emissions, contrary to Limbs B and C of the SEO and the basis DEED cited in rejecting a distillate-only benchmark.

4.1.4. No firm gas transport service exists without a fixed reservation cost

With insufficient non-firm transport available, the proposed facility would need to procure firm transport to operate as intended. All three **firm** reference services in the Economic Regulation Authority (**ERA**) approved DBNGP access arrangement for 2026–2030 (T1 Full Haul, P1 Part Haul and B1 Back Haul) require Contracted Capacity with a capacity reservation charge payable whether or not gas flows. Under the ESM Rules, the BRCP must allow the Benchmark Technology to recover its capital and fixed operating costs. The ERA's *Offer Construction Guideline* is explicit that "costs which must be borne by the facility regardless of whether the facility

¹² AEMO, 2025 Western Australia Gas Statement of Opportunities, December 2025.

¹³ 2026 WEM ESOO, p 93.

¹⁴ DEED, [WEM Investment Certainty \(WIC\) Review Minutes](#), 6 August 2026, p 5.

produces electricity or not, are fixed costs and may not be recovered in the Real-Time Market or the Short-Term Energy Market (**STEM**)."¹⁵

DEED's recommendation of gross CONE rests on the finding that the proposed technology "will not earn material net revenues from the WEM, other than the RCM revenue". **A fixed transport cost cannot be both excluded from the BRCP because it is recovered from energy market margins and ignored in the CONE assessment because there are no such margins.**

DEED includes the cost of transport for the 'fat lateral / gas only' configurations on the basis that secured fuel is required for RCM accreditation. DEED further contends that equivalent firm gas transport is not required for the dual fuel case as the facility will accredit on distillate. EMG's view is that while firm gas transport is not required for the dual fuel case for RCM accreditation, it is nonetheless critical for validating the over-arching premise that the facility will not be primarily distillate fuelled. The BRCP should cost the facility DEED has modelled, not a different one.

EMG notes DEED's reference to trucked LNG as an alternative to pipeline reservation charges, with the cost for trucked LNG suggested to be recovered as a variable cost in the Real-Time Market. Similar to pipeline transport, the cost structure of trucked LNG is largely fixed, comprising the capital cost (or rental cost) of an onsite LNG storage and regasification facility and a fixed tariff reserving capacity in the LNG production facility itself.

To EMG's knowledge, there are no trucked LNG providers operating a "merchant" style market model. Accordingly, trucked LNG is subject to the same treatment as firm pipeline capacity reservation – the fixed costs should be incorporated in the BRCP. EMG further note that pipeline delivered gas is a far more cost effective (and practical) gas supply solution than trucked LNG for a facility of the proposed size and agree with DEED's position to solely consider gas supply via the DBNGP.

Put simply, neither firm gas transport nor trucked LNG is infrastructure cost free, and it is not an entirely variable cost; a facility claiming not to run primarily on distillate must carry the fixed costs inherent to that strategy.

4.1.5. The proposal is not consistent with industry practice

EMG is not aware of any existing GPG in the SWIS that operates without a firm transport position. Given the nature of the WA transport market, and the unacceptability of distillate-only operation, EMG does not consider it credible that a new facility of this scale, intending to operate on gas, would not procure at least a baseline proportion of firm transport to underpin its operating strategy.

4.1.6. Excluding transport costs distorts the market by prejudicing independent new entrants

DEED's reasoning relies on gas transport being obtained "opportunistically or from the broader Market Participant portfolio". Only organisations with large existing gas portfolios and multiple GPGs could attempt to pool transport across their GPG fleet to avoid a new transport position – and even then, EMG considers it highly unlikely that any entity could source the required transport quantity (up to 77 TJ/day at peak, as per Section 4.1.1) from an existing portfolio without contracting new firm capacity. The ESM Rules define the Benchmark Technology as a notional **new** Facility. An independent new entrant has no portfolio to draw on and must contract transport before financial close.

Excluding gas transport reservation therefore denies new entrants' recovery of a real fixed cost of securing fuel, while favouring incumbents with established GPG fleets. A BRCP that entrenches incumbency and disadvantages new entrants whose competition lowers the delivered cost of electricity is inconsistent with the SEO.

¹⁵ ERA, *Offer Construction Guideline*.

4.2. Consequence and EMG's recommended position

By excluding all fixed transport costs, the Draft Determination proposes an operating strategy that cannot be achieved – it assumes all of the benefits without accepting the consequential real fixed cost.

At best, a facility built on that basis would likely run substantially on distillate and deliver higher emissions and higher Real-Time Market costs than DEED has assumed, contrary to Limbs B and C of the SEO. More likely, it would not be built at all: developers attuned to the WA gas market will require a measure of firm transport to underpin the strategy, and the proposed BRCP does not compensate for it.

EMG agrees with DEED's intent of optimising the significant cost of gas transport, especially in the context of a low capacity factor peaking GPG. EMG contends that the gas transport strategy should balance firm and opportunistic transport capacity and recommends a **minimum firm reservation of 50%** of the facility's transport requirement.

This is a reasonable middle ground: it provides certainty over gas transport to underpin the operating strategy – sufficient for one of the two SGT5-2000E units at full load on gas – while leaving room to procure opportunistic transport for the balance if available and needed to meet dispatch targets, with distillate as backup. The cost impact of this strategy for the SGT5-2000E facility is summarised below.

Firm transport reservation (share of requirement)	Contracted capacity (GJ/day)	Share of full- load fuel	Incremental BRCP Cost (\$/MW/yr)	Total BRCP (\$/MW/yr)
None – as proposed	–	–	–	\$345k
50% – EMG recommended minimum	38,700	50%	+\$82k	\$427k
100%	77,436	100%	+\$164k	\$510k

Contracted capacity = full-load fuel rate in GJ/h × 24 ÷ 1.2 (Summer Hourly Peaking Limit), scaled by the reservation share. Capital cost as per the Draft Determination. Impact on BRCP cost calculated using DEED workbook. All monetary figures in 2029 Australian dollars.

5. Combined effect on the selection of the Benchmark Technology

EMG does not advocate for a particular technology; the Benchmark Technology should be whichever delivers Peak and Flexible Capacity at the lowest fixed cost on a consistent and relevant cost inclusive basis.

Applying the above discussed corrections to DEED's calculation for the proposed SCGT (2 × SGT5-2000E, dual fuel) compared to the 7-hour BESS yields the following:

Build Up	SCGT Dual Fuel Proxy BRCP (\$/MW/yr)	7-hr BESS Proxy BRCP (\$/MW/yr)	SCGT cost below 7-hr BESS (%)
Draft Determination	344,893	464,536	26%
Plus: Firm transport reservation at 50% of requirement	426,980	464,536	8%
Plus: Power plant cost updated to final GenCost 2025-26	455,573	474,134	4%
Plus: Illustrative 10% turbine premium from cost growth and to secure delivery	483,818	474,134	-2%

Capital cost uplift applied to the power plant cost only (excluding connections and land) and carried through DEED's worksheet (annuity, cost-of-capital factor, insurance allowance and escalation). The 7-hour BESS is updated to final GenCost 2025-26 battery costs on the same basis. Transport reservation as per the table in section 4.2. All figures in 2029 Australian dollars.

Indicatively adjusting the capital cost (inclusive of modest premium to secure delivery) and including a partial firm transport position reverses the technology cost ranking and **results in**

the 7-hour BESS becoming the lower-cost technology. EMG's submission is that the ranking presented in the Draft Determination is therefore not robust, and that GPG costs (reflecting recent price movements) and transport assumptions must be re-evaluated before a final determination is made.

6. Other matters

6.1. Gross versus net CONE

EMG supports Proposal B. DEED's modelling shows that net revenues are immaterial relative to Reserve Capacity revenue, and a net CONE approach would introduce forecasting sensitivity into a parameter on which investment decisions depend. EMG agrees that the resulting uncertainty would be likely to deter investment and that this would outweigh the modest theoretical saving.

6.2. Flexible Capacity – minimum stable load

The Flexible Capacity service requires a minimum stable load of 46%. DEED observes that below about 50% load, the dry low emissions burners of a gas turbine generally switch to a higher-emitting diffusion mode, and that sustained operation in that mode is not good environmental practice.¹⁶ The Benchmark Flexible Technology should be capable of operating at 46% load in line with good industry practice, in its emissions-compliant mode. EMG asks DEED to confirm the basis on which each configuration has been assessed as meeting this requirement, noting that applying it in a manner which is consistent with good electricity industry practice may exclude some turbine configurations.

7. Recommendations

EMG recommends that, before finalising the determination, the Coordinator:

1. Update all technology capital costs to at least the CSIRO GenCost 2025-26 Final Report values and, specifically for GPG plant, incorporate market-tested capital costs no more than one quarter old.¹⁷
2. Include an explicit allowance for the cost of securing turbine delivery consistent with a 1 October 2029 supply commencement date.
3. Include a fixed DBNGP capacity reservation cost for the dual fuel GPG configuration, at a minimum of 50% of the capacity required to supply its full-load fuel rate within the T1 Hourly Peaking Limits.
4. Re-evaluate the relative ranking of the proposed SCGT against the 7-hour BESS on a consistent and corrected basis.
5. Publish the capacity factor of the proposed facility and coincident gas demand of the GPG fleet determined via market modelling to enable assessment of the viability of the proposed operating strategy, its cost and emissions outcome.
6. Confirm that the 46% minimum stable load for Flexible Capacity is assessed in emissions-compliant operation, consistent with good electricity industry practice.

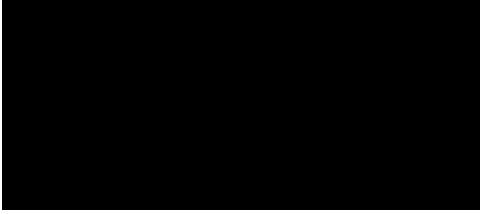
Failing to reflect the true fixed cost of the Benchmark Technology risks setting a BRCP at which no new capacity will be delivered — precisely when the SWIS requires new generation investment to replace retiring coal plant and maintain reliability through the energy transition.

EMG would welcome the opportunity to discuss this submission with DEED.

¹⁶ DEED, *2026 Benchmark Technology Review – Draft Determination for Consultation*, footnote 26.

¹⁷ GPG capital cost data could be informed by market soundings with turbine manufacturers or consultancies with direct knowledge of recent pricing.

Yours sincerely



Dr Michael Shaw
Executive Director – Commercial and Strategy
Energy Matrix Group