



Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Energy Policy WA

MRIWA Net Zero Emission Mining conference

Hybrid PPA Guide and Template

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Working together for a
brighter energy future.

I wish to acknowledge the traditional custodians of all Australian lands, particularly for the lands we are meeting on, the Whadjuk Noongar people. I acknowledge and respect their continuing culture and the contribution they make to the life of this region.



Energy Industry Development team

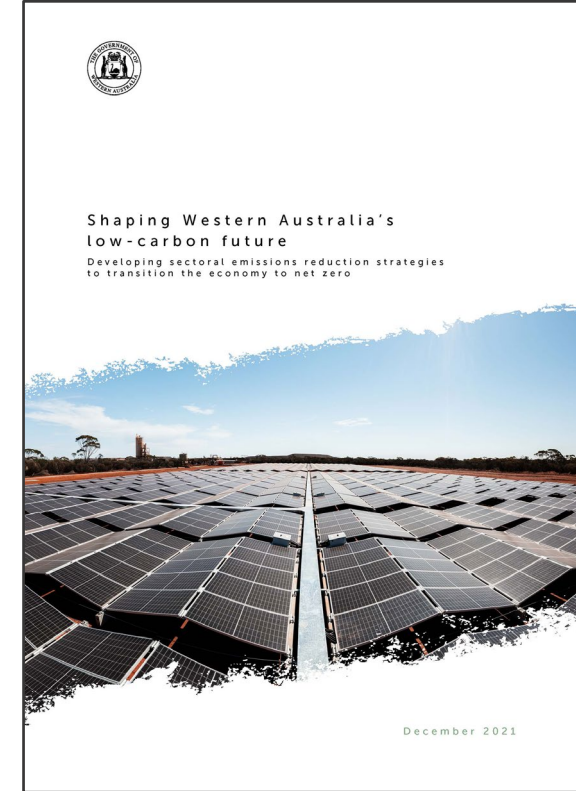
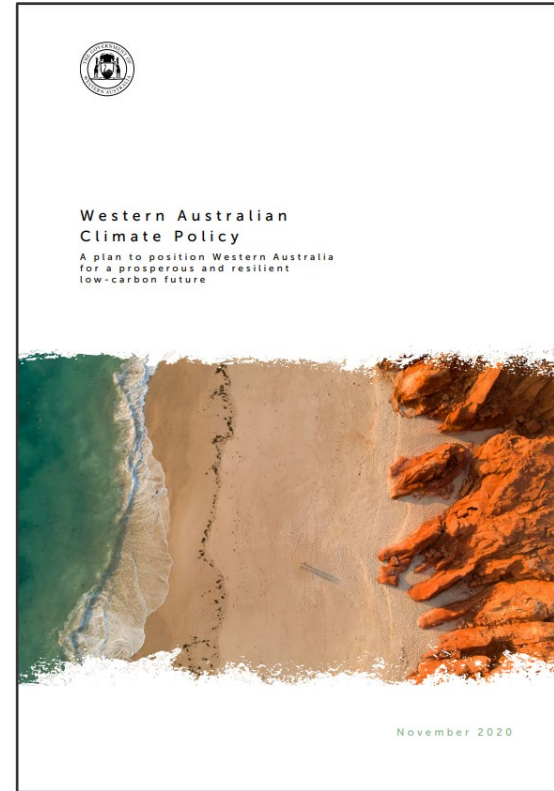
Western Australian Climate Policy outlines a target of net zero greenhouse gas emissions by 2050.

Sectoral Emissions Reduction Strategies are under development to provide emission reduction pathways and actions for reducing emissions.

Leading by example, the WA Government has committed to an ambitious, whole-of-government 2030 target of 80 per cent below 2020 levels.

Demand for WA minerals expected to grow significantly as the world decarbonises.

The EID team has been established within Energy Policy WA to work with manufacturers and the mining industry to increase the uptake of locally manufactured, renewable energy options for remote mine sites.



EID team update

Fact Sheet on Minerals sector GHG emissions and a Case Study on Gold Fields renewable energy projects.

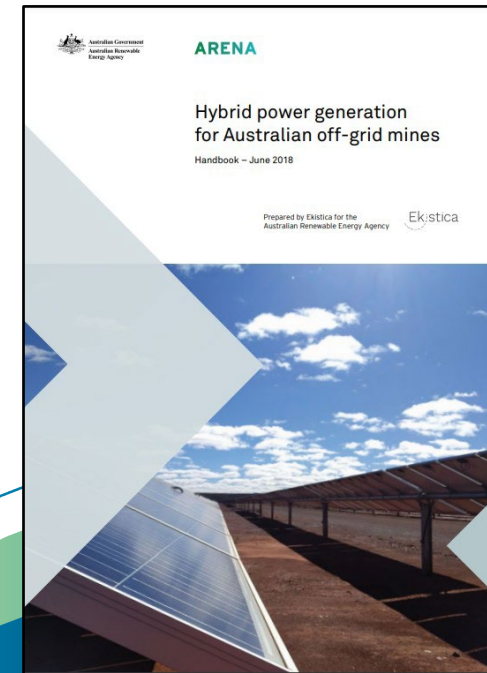
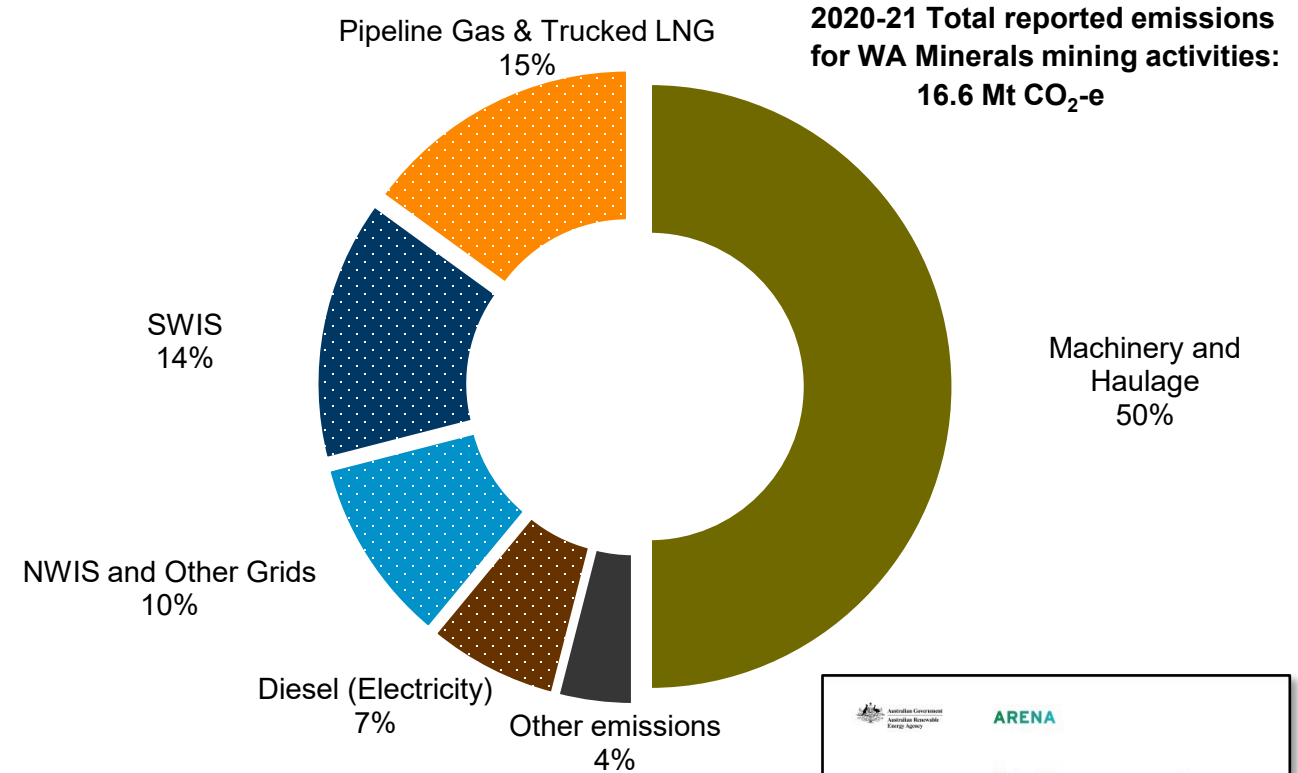
Work with other agencies includes:

- Future Battery and Critical Minerals Industries Strategy,
- Heavy Industry Low-carbon Transition CRC, and
- Sectoral Emission Reduction Strategies.

Consultations with stakeholders indicated that some of the barriers for renewable generation included:

- Lack of skilled staff,
- Land access,
- Approvals,
- Short 'mine life', and
- Initial capital costs.

A Power Purchase Agreement can assist with addressing the capex barrier for miners, as the Independent Power Producer incurs this cost.



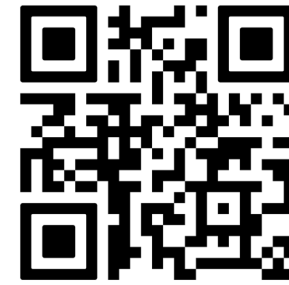


Find out more:

www.energy.wa.gov.au

[linkedin.com/company/energy-policy-wa/](https://www.linkedin.com/company/energy-policy-wa/)

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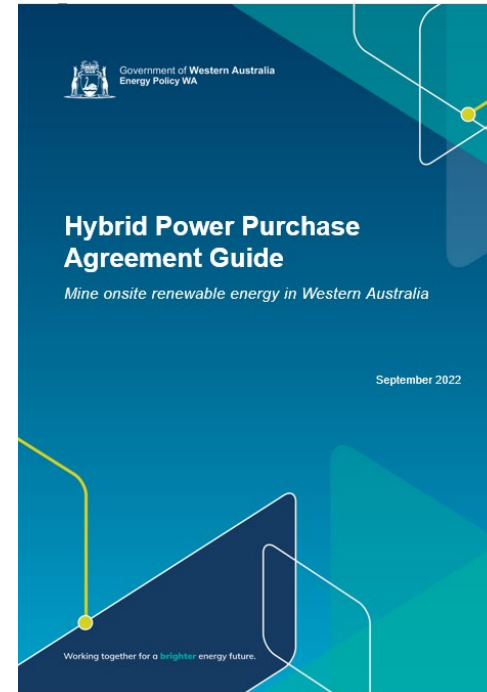
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*We're working for
Western Australia.*



Hybrid Power Purchase Agreement – Guide and Template

- In May 2022, EPWA engaged JacMac to produce a high-level Guide to the legal aspects of PPAs for onsite renewable generation.
- The Guide is targeted at small to medium miners looking to deploy renewable generation without incurring additional debt.
- We've also produced a Template PPA which is available as a docx on EPWA's website as a starting point for contract drafting.



Disclaimer

- **This presentation is not legal advice. Every PPA is different. Please seek your own legal advice in relation to any project you may consider.**
- **These slides are designed to be accompanied by the spoken material.**
- **Please see also the Guide and handout.**

Technical challenges

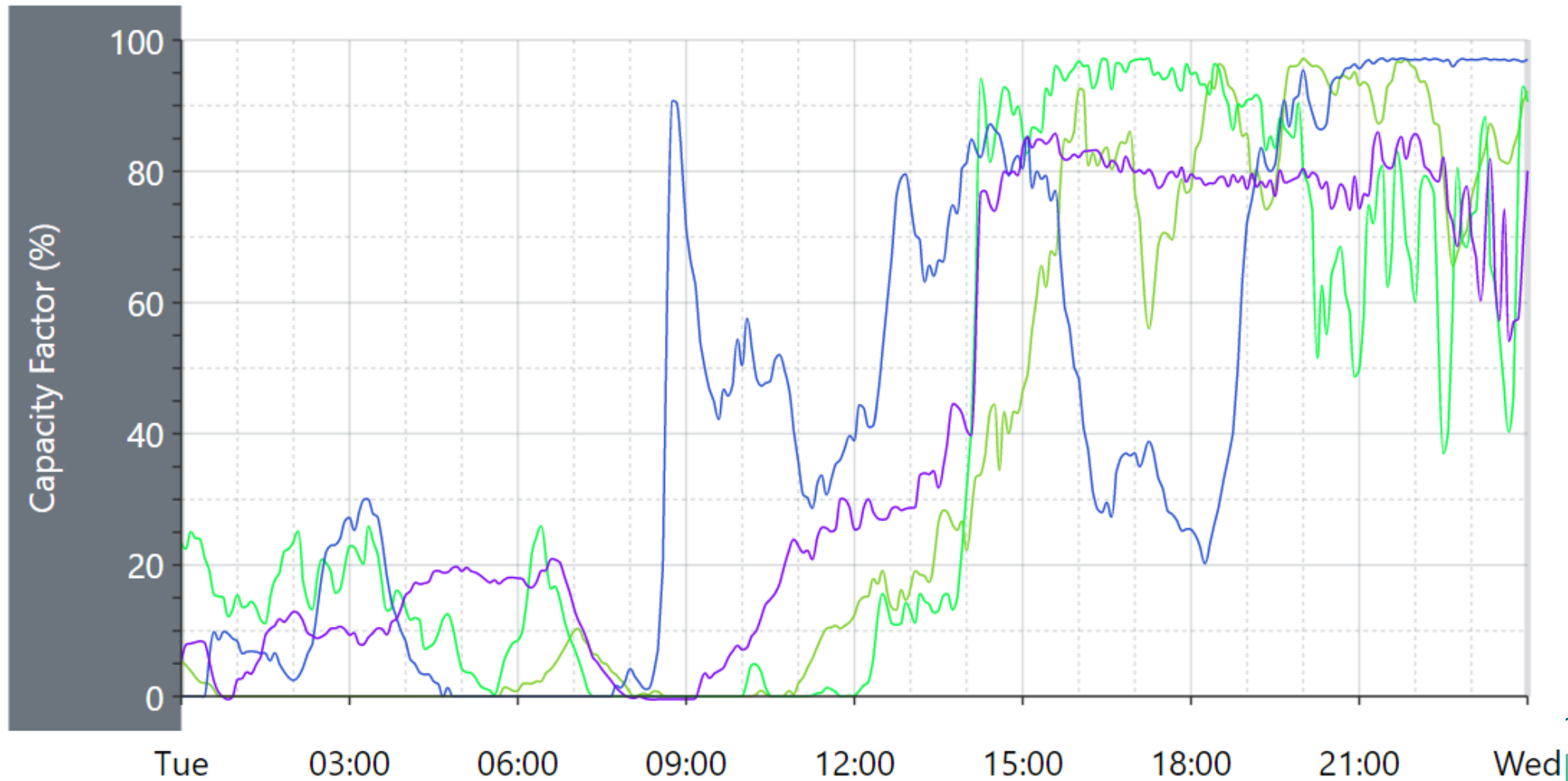
Solar is not just *diurnal*,
it's variable



Wind is not just *intermittent*,
it too is variable

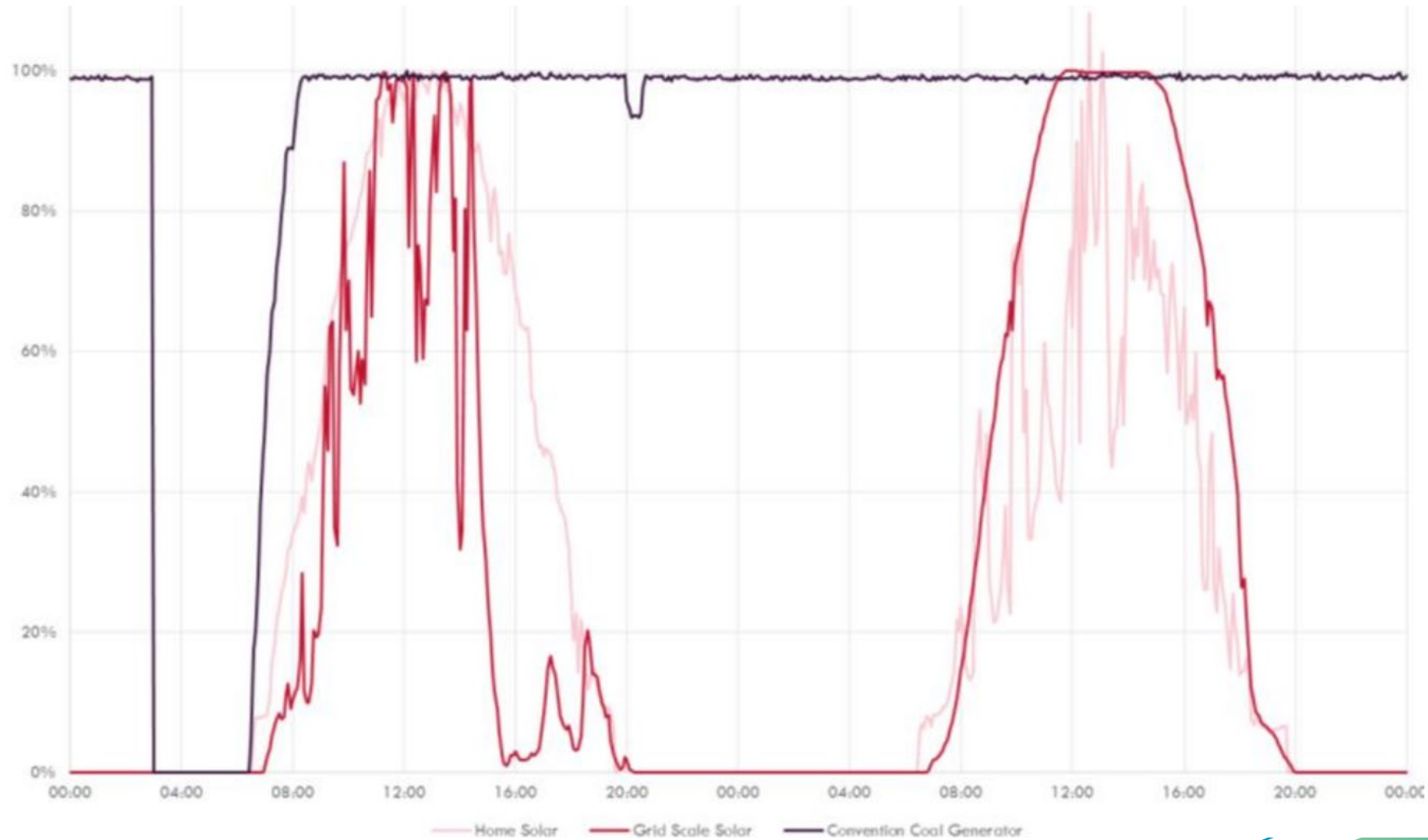


Wind is variable



Source: Aneroid Energy ([link](#)). AEMO NEM wind output (capacity factor) for Tasmania for 31 August 2022.

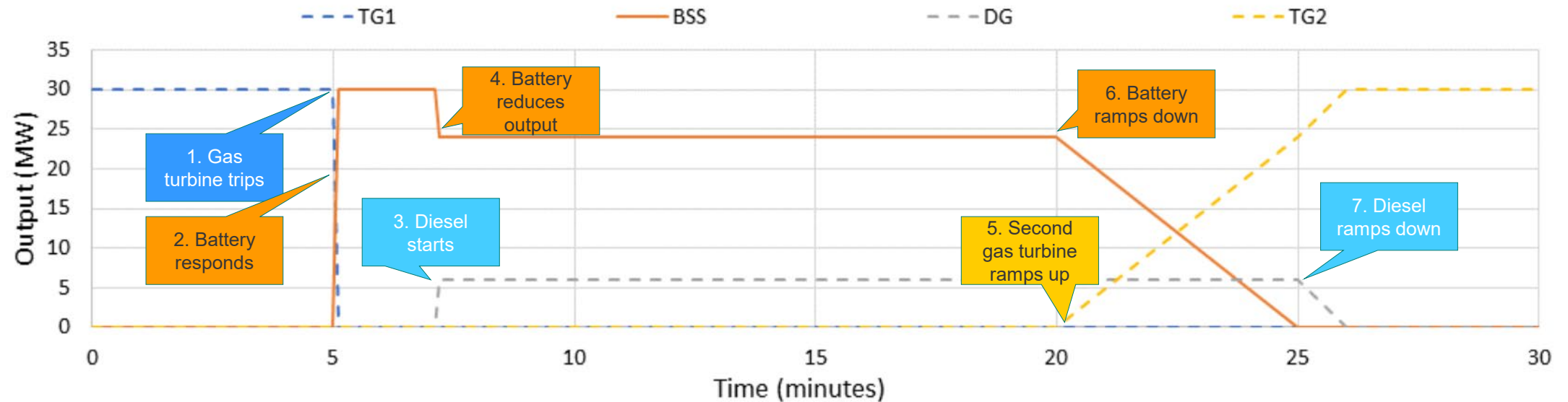
Solar is variable



Source: AEMO observations: Operational and market challenges to reliability and security in the NEM ([link](#)) fig. 26, p. 31

Batteries can fill the gap

- Can store RE for later use
- Can absorb surplus RE to balance system
- Can sustain load when RE drops away
- Can act as zero-fuel 'spinning reserve', e.g. for conventional generation, as shown:

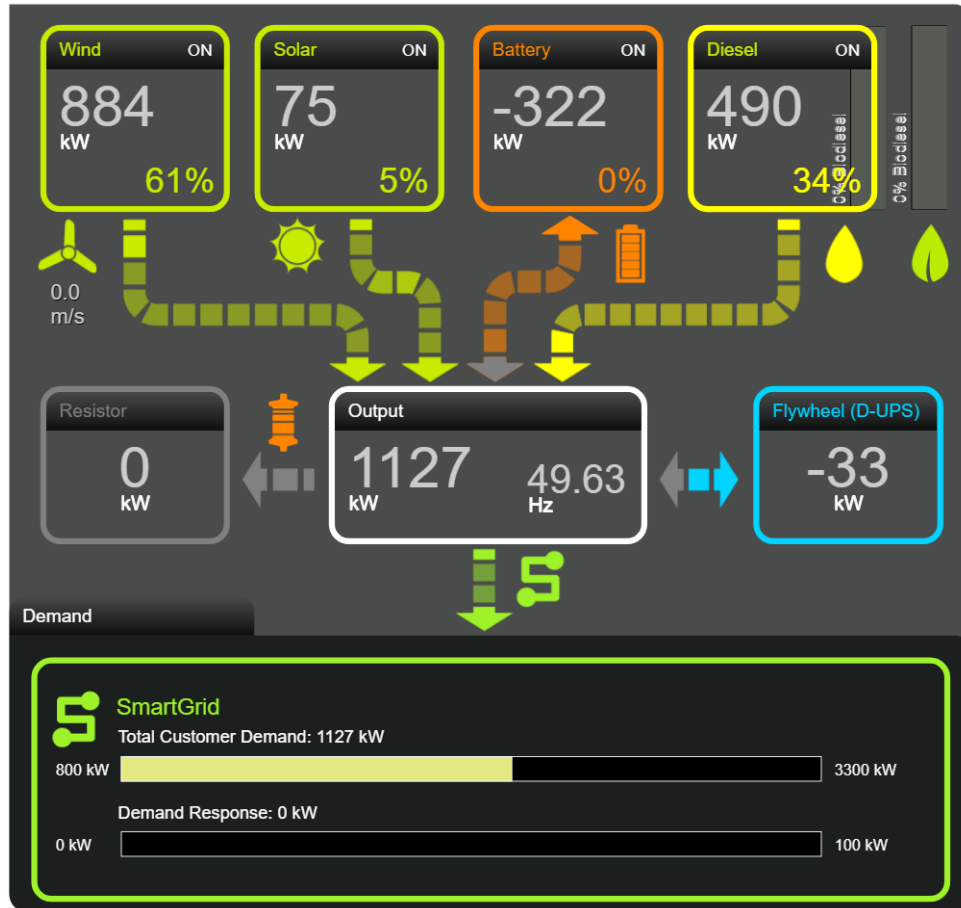


Source: Alinta Newman Battery – G Bryant, presentation to Perth AIE Young Energy Professionals, 19 Sept 2018 ([link](#))

Modern hybrid systems

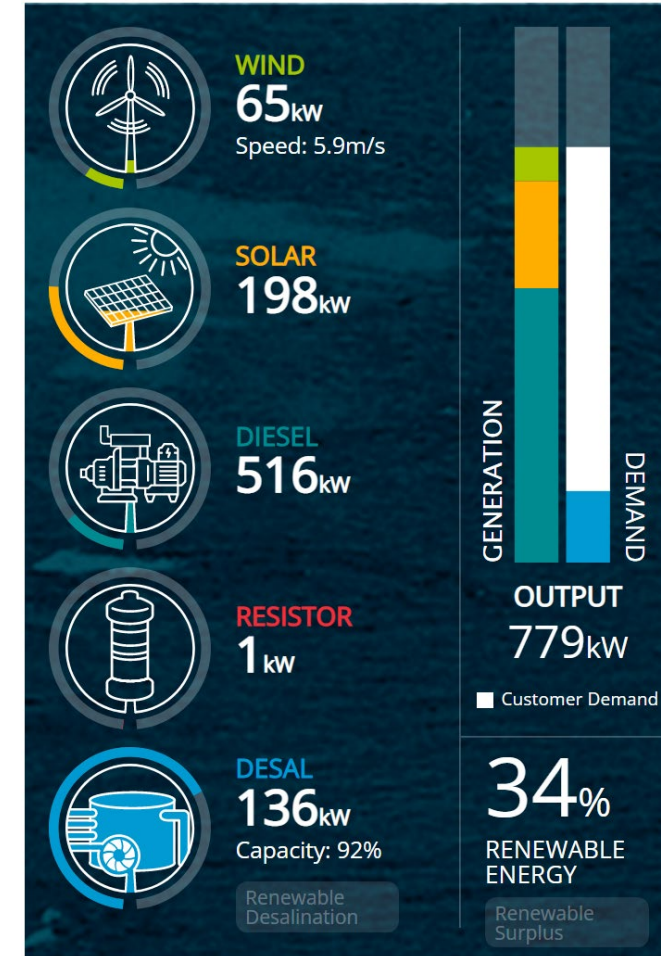
King Island

Wind/solar/diesel with battery and flywheel



Rottnest Island

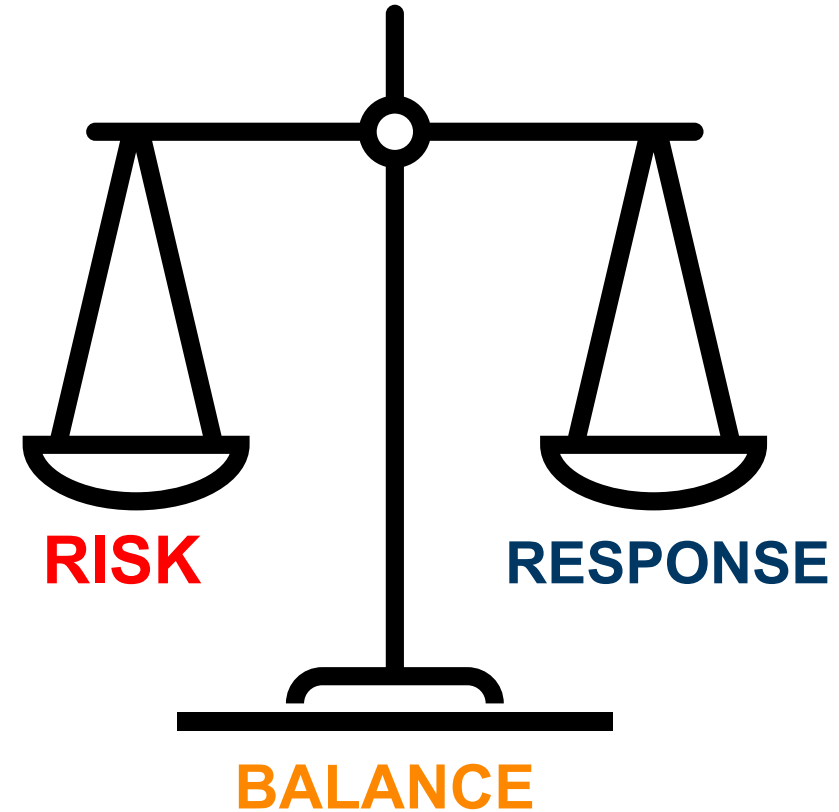
Wind/solar/diesel with dispatchable load



Source: Hydro Tasmania King Island Renewable Energy Integration Project ([link](#)) and Rottnest Island Project ([link](#)), 31 August 2022

Power Purchase Agreements - PPAs

- Contractual or legal response
- Commercial response
- Operational or technical response



Power Purchase Agreements - PPAs

Hybrid PPA Template

- Remote off-grid mines
- Mine onsite renewable energy generation in Western Australia
- Optional clauses

Hybrid PPA Guide

- Key issues
- Variations

Power Purchase Agreements - PPAs

Negotiating your PPA

- **Key Risks**
- **PPA risk management options**
 - Allowances
 - External Tools
 - Incentives
 - Contractual and legal remedies

Mad Dog and Dodgy Bros' PPA

New hybrid power system for Mad Dog Mining's existing minesite:

- 3MW solar
- 10 MW wind
- 5 MW diesel backup

Dodgy Bros Renewables guarantees 60% p.a. carbon-free electricity

DBR will build, own and operate on site leased from MDM

MDM keeps all ACCUs and RECs

Supply start: 1 January 2024 (when MDM's existing PPA expires).

Late completion LDs: \$1,000 /day

10 year term

\$40 /MWh. Minimum annual payment \$TBC.

MDM to secure site tenure

MDM to supply diesel free of charge

Agreed for MDM



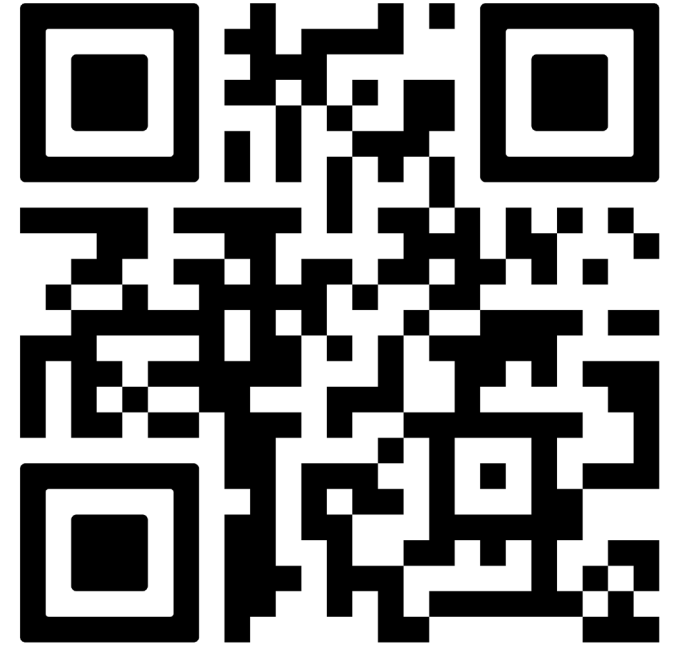
Agreed for
DBR



What could possibly go wrong?

1. Discover several important aboriginal heritage sites on wind and solar farm site – 12-month delay
2. Supply chain disruption for solar and wind equipment. Only diesel plant available on 1 January 2024 – mine runs diesel-only for 12 months
3. Renewable energy shortfall – plant never reaches forecast renewable penetration
 - Equipment does not perform to manufacturer's specifications
 - Parties over-estimated wind or solar resource
4. Dodgy Bros insolvency – financiers repossess and sell the power assets

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Find out more:

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