



Government of Western Australia
Energy Policy WA

WEM Investment Certainty Review Working Group Meeting 2023_08_31

31 August 2023

Working together for a
brighter energy future.

Meeting Protocols

- Please place your microphone on mute, unless you are asking a question or making a comment
- Please keep questions relevant to the agenda item being discussed
- If there is not a break in discussion and you would like to say something, you can 'raise your hand' by typing 'question' or 'comment' in the meeting chat
- Questions and comments can also be emailed to EPWA - Energy Markets energymarkets@dmirs.wa.gov.au after the meeting
- The meeting will be recorded and minutes will be taken (actions and recommendations only)
- Please state your name and organisation when you ask a question
- If you are having connection/bandwidth issues, you may want to disable the incoming and/or outgoing video

Agenda

Item	Item	Responsibility	Type	Duration
1	Welcome	Chair	Noting	2 min
2	Scope of the WIC Review	Chair	Noting	10 min
3	Initiatives 4 & 5: Emission Thresholds for RCM Participation – revisiting work to date	RBP	Discussion	40 min
4	Schedule of working group content	RBP	Discussion	10 min
5	General Business	Chair	Discussion	2 min
	Appendix: Previous Emission Threshold Analysis			

2. Scope

WEM Investment Certainty Review: Agreed Scope

- Initiative 1: Changing the Reserve Capacity Price curve so it sends sharper signals for investment when demand for new capacity is stronger
- Initiative 2: A 10-year RCP guarantee for new technologies, such as long-duration storage
- Initiative 3: A wholesale energy price guarantee for renewable generators, to top up their energy revenues as WEM prices start to decline, in return for them firming up their capacity
- Initiative 4: Emission thresholds for existing and new high emission technologies in the WEM
- Initiative 5: Introducing a 10-year exemption from the emission thresholds for existing flexible gas plants that qualify to provide the new flexibility service
- Modelling: determine whether the package of reforms under the WIC Review will provide sufficient revenue certainty to potential investors to ensure that the Planning Criterion will be met

3. Emission Thresholds for Existing and New High Emission Technologies in the WEM

Penalties on High Emission Technologies - Background

In mid-2022, the Minister for Energy identified the need for a policy to impose a financial penalty on existing and new high emission technologies

Key policy constraints:

1. There will be a penalty on high-emission technologies
2. The penalty will apply to all facilities, new and existing
3. The penalty will be implemented through the WEM
4. The penalty should result in net zero cost impact on consumers
5. The accumulated penalties will be used to incentivize firming solutions to facilitate the growth in renewable intermittent generation

Policy Implementation Options

EPWA and the RCMWG identified six options:

1. Penalty on actual trading interval emissions
2. Penalty on actual settlement period emissions
3. Penalty on actual prior capacity year emissions
4. Penalty on theoretical maximum settlement period emissions
5. Participants required to surrender LGCs or ACCUs in proportion to their emissions
6. Emissions threshold for RCM participation, as used in UK and Europe

Two options were shortlisted for further consideration in late 2022:

- Option 1 – penalty on trading interval emissions
- Option 6 – emissions threshold for RCM participation

Preferred Option

In March 2023, option 6 was identified as the preferred option, as it:

- Will provide more certainty of exit timing than option 1, maintaining reliability of supply
- Is simpler to implement and operate than Option 1
- Will have less effect on dispatch incentives, and thus less requirement to monitor and mitigate market power issues of cost pass-through
- Allows use of NGER data rather than requiring a new regime to be set up and run
- Received the most support from MAC and RCMRWG members

MAC and RCMRWG members:

- Expressed concern that penalties would exacerbate reliability issues in the SWIS through accelerated retirement of existing firm generation
- Generally agreed that if penalties were to be implemented, RCM participation thresholds were a reasonable approach

Policy development was paused in Q1 2023, pending ministerial consideration. The Minister subsequently announced a 10 year exemption from emission thresholds for existing facilities providing Flexible Capacity.

UK Capacity Market – Emission Participation Thresholds

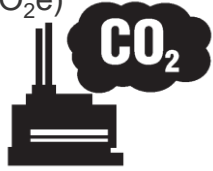
- EU Electricity Regulations set limits on the emissions intensity of facilities participating in the capacity market
- In 2021, the UK made changes to its capacity market to implement these limits – there are two limits:
 - 0.55 tCO₂e of Fossil Fuel origin per MWh of electricity generated (“the Fossil Fuel Emissions Limit”); and
 - 350 tCO₂e of Fossil Fuel origin on average per year per installed MWe (“the Fossil Fuel Yearly Emissions Limit”)
- New generation is only eligible for capacity payments if it has (fossil fuel sourced) emissions less than both limits
- Existing generation (pre 2019) is only eligible for capacity payments if it has (fossil fuel sourced) emissions less than the second limit

Emissions Thresholds – as proposed

- Using data from the Clean Energy Regulator to perform additional checks during CRC allocation for each facility:
 - Determine facility emissions rate (tCO₂e/MWh) in previous capacity year as:
facility MWh emissions rate = facility scope 1 emissions / electricity production
 - Determine facility emissions quantity (tCO₂e/MW) in previous capacity year as:
facility MWh emissions rate = facility scope 1 emissions / nameplate capacity
 - Determine whether facility MWh emission rate is below threshold:
facility MWh emissions rate ≤ rate threshold
 - Determine whether facility MW emission quantity is below threshold:
facility MW emission quantity ≤ quantity threshold
- If facility is above either threshold, CRC = 0
- Both thresholds would apply to all new facilities at implementation.
- Only the emission quantity threshold would apply to existing facilities
- A process would be needed for co-generation facilities to divide emissions between electricity generation and process heat

Emission Rate Threshold

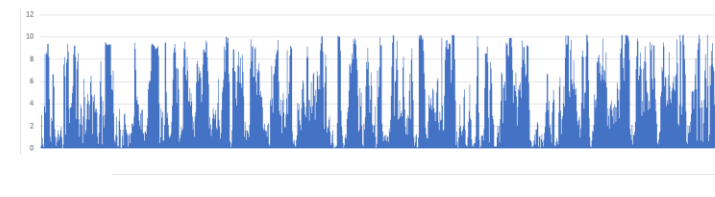
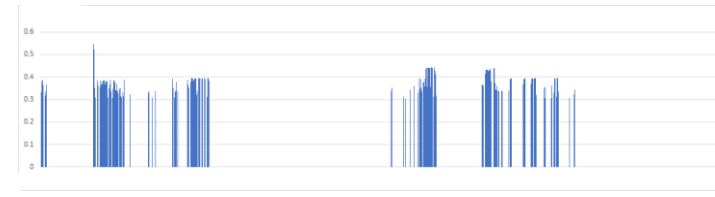
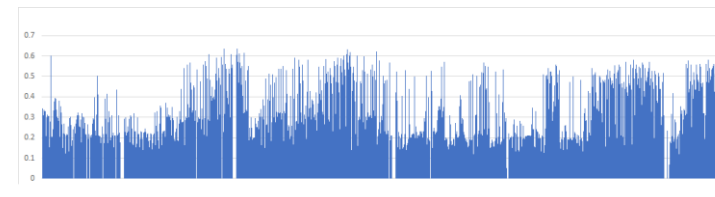
Facility annual
scope 1 emissions
(tCO₂e)



0



Previous capacity year facility generation
(MWh)



Facility emission
rate (tCO₂e/MWh)



For each
capacity year

Emission Quantity Threshold

Facility annual
scope 1 emissions
(tCO₂e)



Facility nameplate
capacity (MW)



Facility emission
quantity
(tCO₂e/MW)



For each
capacity year



0



0

Emissions Thresholds – Previous Proposal

The European limit on emissions intensity is 0.55 tCO₂/MWh.

The lowest emission gas-fired facility (CCGT) currently operating in Australia has an emissions intensity of 0.375 tCO₂e/MWh.

EPWA proposed to:

- Set an emission intensity threshold of 0.55 tCO₂e/MWh to apply to all new facilities from the 2027 capacity cycle (for the 2029 capacity year). This threshold would not apply to existing facilities.
- Set an emissions quantity threshold of 1,000 tCO₂e/MW to apply to all new facilities from the 2027 capacity cycle (2029 capacity year)
- Set an emission intensity threshold of 4,000 tCO₂e/MW to apply to all existing facilities for the 2027 capacity cycle (2029 capacity year)
- Decrease the threshold for existing facilities by 500 tCO₂e/MW in each subsequent year, until the threshold is the same for new and existing facilities in the 2035 capacity cycle

Given the reliability concerns, the WIC Review needs to carefully consider the timing of introduction and the transition in of existing facilities.

Emission Threshold Considerations for WIC Review

Federal emissions policy has developed in the last few months, but amendments to the safeguard mechanism still apply a sectoral baseline to electricity which is not expected to bind.

At state level, the new State Electricity Objective will explicitly require balancing reliability and price with environmental impact.

This wider situation is consistent with the introduction of emissions thresholds for RCM participation. The signalled exemption for existing flexible facilities will go some way to mitigating potential reliability issues.

The quantity threshold will effectively cap the annual GWh output for certain facilities. While participants are mostly free to manage facility operation, capacity obligations and market power mitigation rules may constrain the ability to withdraw plant when it is close to the quantity threshold. Similarly, AEMO powers to direct facilities may also affect whether a facility is under or over the threshold. The dispatch process may need to evolve to consider the presence of the threshold.

The WIC Review needs to finalise:

- Threshold levels for new facilities
- Transitional threshold levels for existing facilities
- Exemption parameters for facilities providing Flexible Capacity
- Commencement timing
- Transition timing
- Interaction between dispatch availability obligations and emissions limits.

Links between the WIC Review and the Benchmark Technology Review

In parallel with the WIC Review, EPWA is reviewing the technologies used to set the Benchmark Reserve Capacity Price. This work will identify the marginal new entrant capacity provider for each of the two capacity products (Peak Capacity and Flexible Capacity).

Emissions thresholds are a key determinant of what new technologies can be built:

- The Benchmark Technology Review is using the proposed thresholds to shortlist technology types
- The WIC Review needs to consider thresholds in light of the capability of available technologies

Market modelling is a component of both reviews:

- The BT Review will model the likely dispatch and revenue of new entrant technologies
- The WIC Review will model the effects of all policies to assess financial viability of new build of various types

EPWA is managing feedback loops between the two projects.

4. Working Group Schedule

Schedule of content for WIC WG meetings

11 October:

- Emissions thresholds updated proposal
- Exemption from emission thresholds initial proposal
- 10-year price guarantee initial proposal
- Modelling discussion

8 November:

- Emission thresholds (incl exemptions) final proposal
- 10-year price guarantee final proposal
- Price curve options.

6 December:

- Price curve analysis
- Price curve initial proposal

24 January:

- Price curve final proposal
- Price guarantee options.

February:

- Price guarantee analysis
- Price guarantee initial proposal.

March:

- Price guarantee final proposal.

April – Consultation paper released

June:

- Updates to proposals based on submissions.

June – Information paper released

July:

- Draft amending rules.

Questions or feedback can be emailed to energymarkets@energy.wa.gov.au

5. General Business

*We're working for
Western Australia.*

APPENDIX – Previous Emission Threshold Analysis

Using the NGER Data

CER reports data for:

- Both scope 1 and scope 2 emissions
 - Scope 1 covers emissions from burning fuel in generation facilities, including for parasitic load
 - Scope 2 covers emissions relating to electricity imported from the grid
- Behind the meter facilities, including several intermittent loads which participate only partly in the RCM
- tCO₂ equivalent, rather than the European approach of CO₂ only

SWIS thresholds will be based on scope 1 emissions only, as including scope 2 emissions would double count emissions on electricity imported from the grid

Facility identifiers used in the NGER data are different from those used in WEM registration. In some cases facilities registered separately in the WEM are reported together in NGER data

Data is reported by 28 February for the period ending 30 June the previous year

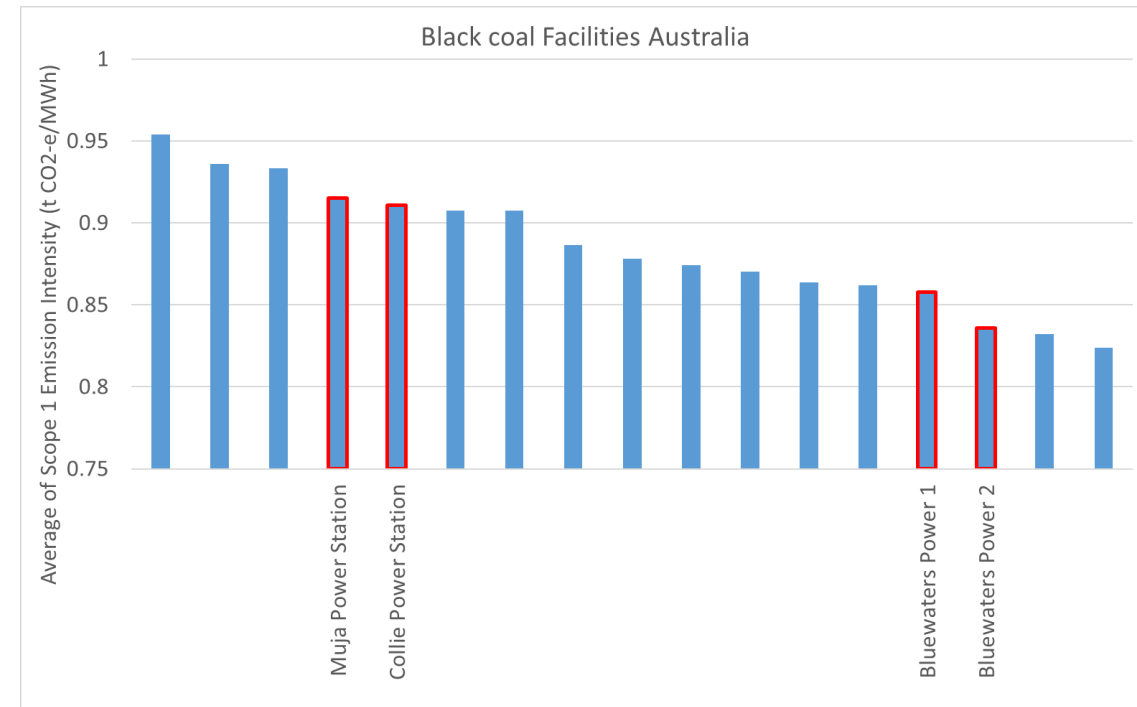
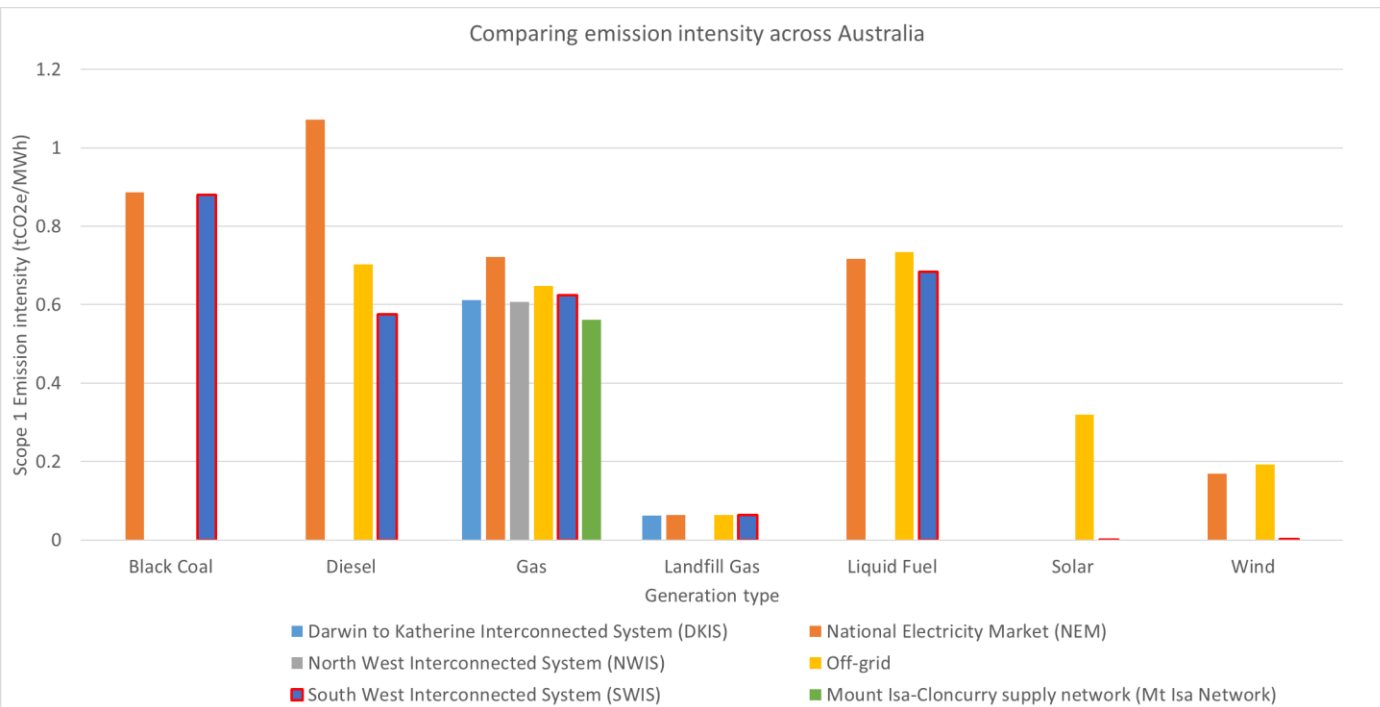
- Because of this lag in reporting, the previous year's emissions intensity would be applied to current year generation, and if a facility reached the quantity limit during the year, capacity payments would be foregone from that point on

SWIS Generation Emissions Intensity

CER data for SWIS generation is consistent with that in the rest of the country

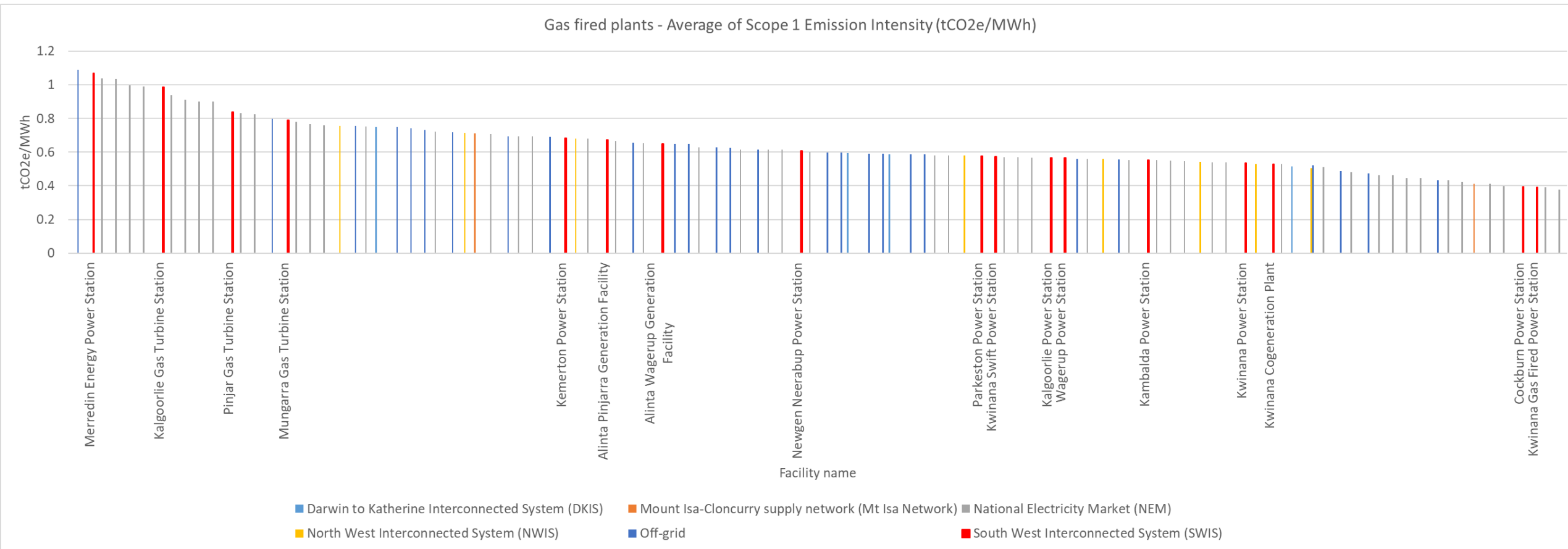
The left chart shows average emission intensity for different fuels across different power systems

The right chart shows the five-year-average of NGER reported emissions intensity for black coal facilities



SWIS Generation Emissions Intensity – Gas

SWIS gas generation has a wide range of emission intensities



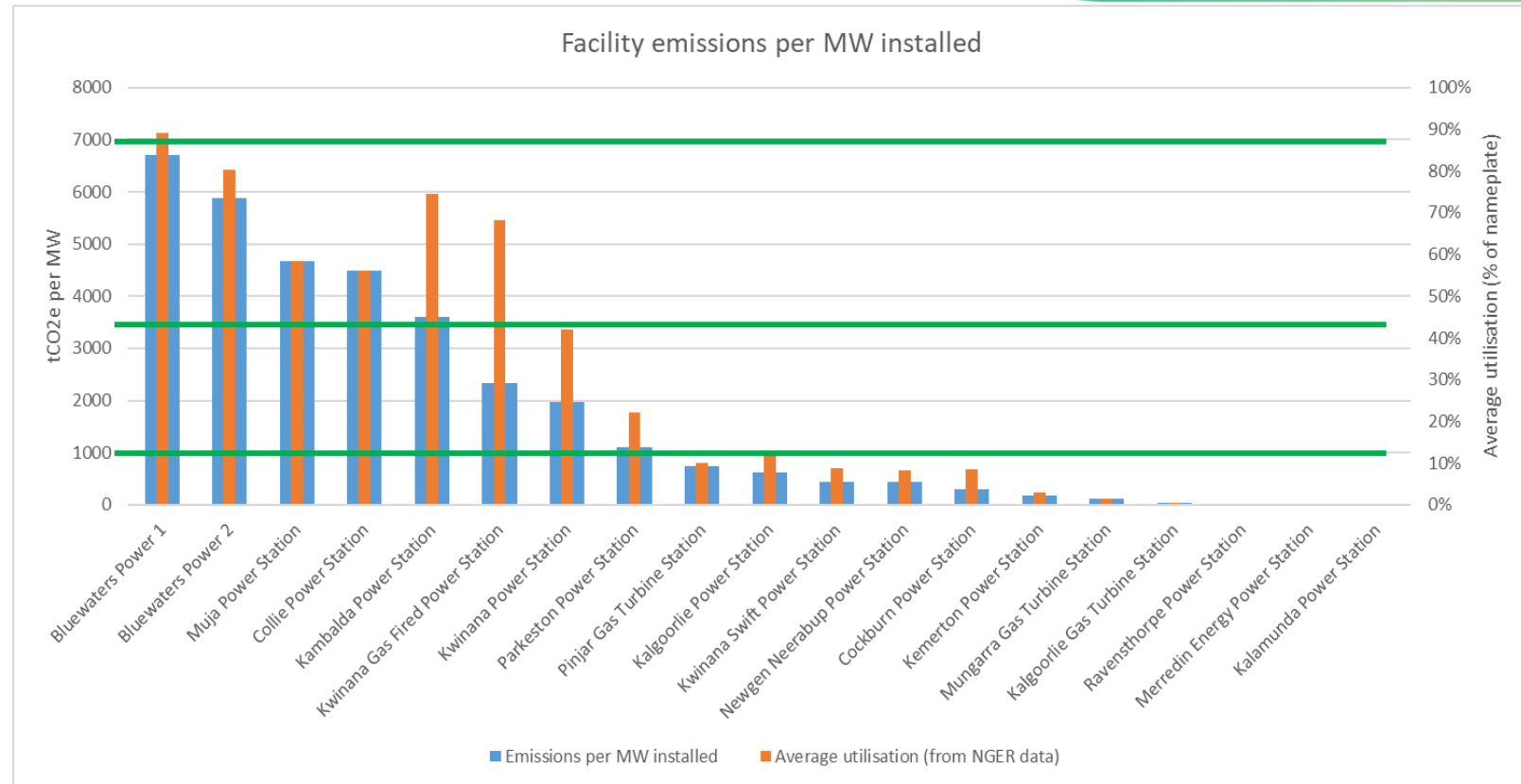
SWIS Emissions Quantities

The European limit on emissions per MW is 350 tCO₂/MW

A threshold of 7,000 tCO₂e/MW/year would not affect any SWIS facilities

A threshold of 3,500 tCO₂e/MW/year would allow a facility with emissions at the proposed intensity threshold to operate at full output all year, or a recently built peaking gas turbine to operate at about 70%

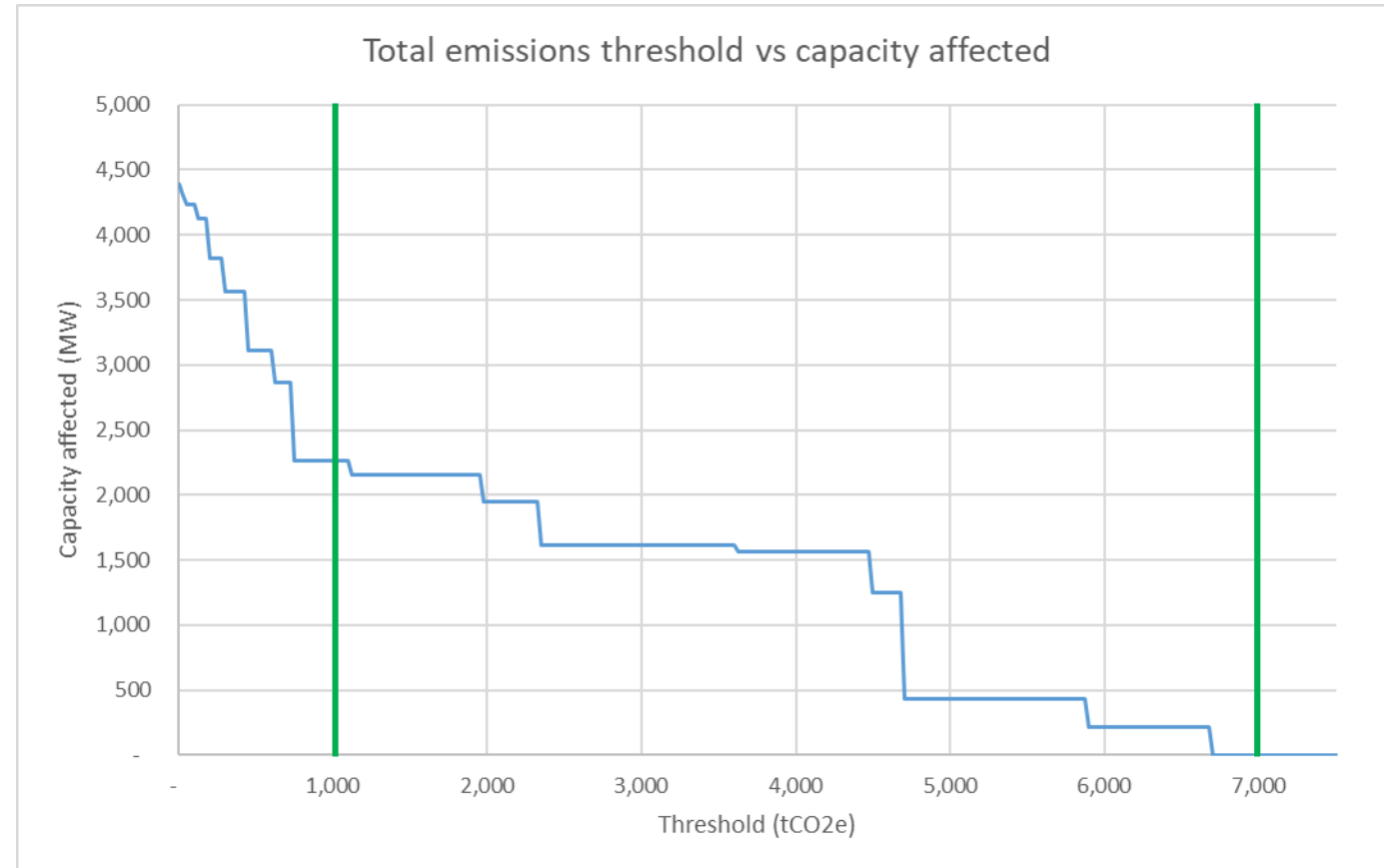
A threshold of 1,000 tCO₂e/MW/year would allow a facility with emissions intensity at the proposed threshold to operate around 30% of the time, and a peaker to operate around 20% of the time



Emissions Quantity Threshold – Proposal

EPWA proposes to:

- Set an emissions quantity threshold of 1,000 tCO₂e/MW to apply to all new facilities from the 2026 capacity cycle (2028 capacity year)
- Set an emission intensity threshold of 7,000 tCO₂e/MW to apply to all existing facilities for the 2026 capacity cycle (2028 capacity year)
- Decrease the threshold for existing facilities by 500 tCO₂e/MW in each subsequent year, until the threshold is the same for new and existing facilities in the 2036 capacity cycle



Facility total emissions used is the average for years 2017-2021

Projected Retirement Impact

Applying an emissions quantity threshold to existing facilities is more supportive of ongoing reliability than applying an emissions rate threshold. Using a gradually decreasing threshold will allow orderly consideration of potential retirement decisions, and spread potential retirements over time

The chart gives the projected impact on early retirement, assuming that:

- Cogeneration facilities are not affected
- Facilities retire immediately when not eligible for capacity credits. This would not necessarily be the case, particularly for those serving intermittent loads
- Facility emissions rates do not improve. If they do, retirements could be delayed
- Facility utilisation does not change. There is potential for utilisation of remaining facilities to increase as other facilities retire, but also for owners to reduce output to stay within the threshold

