



Guidelines: setting international best practice benchmarks

Draft guidelines for consultation

Contents

1	International best practice benchmarks	2
1.1	Safeguard Mechanism baselines and production variables	3
1.2	Setting international best practice benchmarks	5
2	Details for setting international best practice benchmarks	8
2.1	Identifying the best practice facilities and data suitability	8
2.2	Data should be appropriate for the Safeguard context	9
2.3	Time period for selecting data	9
2.4	Number of facilities to use in the benchmark calculation.	9
2.5	Adjusting for Australian conditions	10
2.6	Best practice benchmarks cannot be higher than domestic best practice	10
3	Process for setting benchmarks	11
3.1	Timing	11

1 International best practice benchmarks

New facilities have the opportunity to use the latest technology and build world's best practice emissions performance into their design. As part of the reforms to the Safeguard Mechanism, the Government decided new facility baselines will be set at **international best practice**, adapted for an Australian context. This sends a strong signal to investors that Australia is serious about net zero, and new investments must support this goal.

To reduce competitive distortions between new and existing facilities, international best practice will also apply at existing Safeguard Mechanism facilities if they begin producing new products. This means any Safeguard facility—whether new or existing—that invests in new plant and equipment resulting in the use of a new production variable will face the more stringent performance requirement. A new product is a product (corresponding to a Safeguard Mechanism production variable) for which the facility did not undertake commercial production before 1 July 2023.

The reforms to the Safeguard Mechanism will reduce emissions at Australia's largest industrial facilities and maintain their international competitiveness as the world decarbonises. The reforms apply a decline rate to facilities' baselines so that they are reduced predictably and gradually over time on a trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.

The reformed Safeguard Mechanism commenced on 1 July 2023 and legislative rules were registered on 5 May 2023. This includes the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Amendment (Reforms) Rules 2023*, which update the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* (the Safeguard Rules).

Some details for new facilities were settled during the Safeguard reforms:

- For new gas fields supplying liquefied natural gas activities, the relevant best practice is net zero for their reservoir carbon dioxide (CO₂) emissions¹. This reflects there are gas fields with negligible levels of reservoir CO₂, and opportunities for carbon capture and storage
- New shale gas projects that meet the definition in the rules, will have a zero baseline².
- When setting the international best practice benchmark for the fossil fuel sectors, the Government will consider emerging international standards on methane emissions, such as the [Metcoal Methane Partnership](#) and [Oil and Gas Methane Partnership 2.0](#), as well as data from Australian facilities that may exceed those standards.

¹ Section 35A of Schedule 1 to the Safeguard Rules (as amended) contains the provisions on reservoir carbon dioxide from new gas fields.

² Sections 10 and 54 of the Safeguard Rules (as amended) contain the provisions on shale gas projects.

1.1 Safeguard Mechanism baselines and production variables

New facility baselines decline at the same rate as existing facilities. Trade-exposed facilities may apply for a reduced decline rate.

Baselines, whether for existing or new facilities, are set using a production-adjusted (emissions-intensity) framework. This means baselines rise and fall with production, helping to decouple emissions and economic growth.

A decline rate of 4.9 per cent each year will apply to all baselines to 2030, including for new facilities, ensuring Safeguard facilities deliver a proportional share of the 2030 national target. Trade-exposed facilities, including new facilities, can apply to be trade-exposed baseline-adjusted (TEBA) facilities, and receive a reduced decline rate if their scheme costs are sufficiently high.

Formulas for setting baselines are in section 11 (for existing facilities) and section 25 (for new facilities) of the Safeguard Rules, as amended. In a simplified form, the baseline setting formula is the sum of production multiplied by emissions intensity for all relevant outputs at the facility multiplied by a decline factor:

$$\text{Facility baseline} = \sum \text{Production} \times \text{emissions intensity} \times \text{decline factor} \quad (1)$$

Where the sum takes place over each production variable applicable to the facility, and:

- **production** is the quantity of a production variable applicable to the facility. Production variables are the product or service being delivered, for example tonnes of iron ore or tonne-kilometres of bulk freight transport.
- **emissions intensity** is the emissions per unit of production variable, for example, emissions per tonne of iron ore or tonne-kilometre of bulk freight transport.
 - For new facilities and products, this emissions intensity will be set at an international best practice benchmark.
- **decline factor** is the cumulative decline rate, as described in table 1.
 - The decline factor specified for a financial year applies to all baselines applying in that year (unless a reduced rate applies for trade exposure). This means that a new facility first needing a baseline in 2027-28 will have a decline factor of 0.755.

Table 1: Decline factor

	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Decline factor	0.951	0.902	0.853	0.804	0.755	0.706	0.657

Production variables and industry average emissions intensities are legislated in Schedule 1 of the Safeguard Rules. This is where international best practice benchmarks will also be listed. The [Safeguard Mechanism Document](#) describes the emissions sources for each production variable that are relevant for calculating the corresponding emissions intensities.

Production variables and industry average emissions intensities for these production variables have been developed in consultation with industry under a framework³ based on four principles:

- *Principle 1: Effective*
Provide a suitable basis for setting baselines that reflect emissions per unit of production.
- *Principle 2: Consistent*
Treat facilities and industries consistently. Provide a suitable reference point that is representative of a sectoral average.
- *Principle 3: Practical*
Be as simple and low cost as possible, avoiding excessive measurement and reporting requirements and building on existing schemes, where possible.
- *Principle 4: Robust*
Be based on high quality data and robust methodology that protects the confidentiality of sensitive industry data.

In many cases these principles are more directly relevant to production variable definitions. However, international best practice benchmark emissions intensities should be set in a way that is consistent with these principles. In particular, they should be based on high quality data and robust methodology.

Best practice emissions intensity benchmarks apply to new products from existing facilities as well as new facilities. A 'new product' corresponds to production of a production variable for which there was not commercial production at the facility before 1 July 2023. However, the Safeguard Rules provide that if new production corresponds to a production variable (known as a related production variable) that is substantially similar to an existing production variable, the facility can apply for the Clean Energy Regulator to make a determination that results in the new production using the same emissions intensity as the existing production variable when setting the facility's baseline. For example, if a facility starts producing beverage grade ethanol and already produces 95% ethanol, it could apply for the emissions intensity corresponding to 95% ethanol to apply to its beverage grade ethanol production.

Further information on the Safeguard Mechanism is on the Department's website: [Safeguard Mechanism - DCCEEW](#)

³ The framework is at <https://consult.dcceew.gov.au/safeguard-mechanism-international-best-practice-benchmarks>.

1.2 Setting international best practice benchmarks

Use facility-level emissions and production data from at least two facilities.

Consistent with the calculation of industry average emissions intensities, best practice benchmarks will use facility-level emissions and production data.

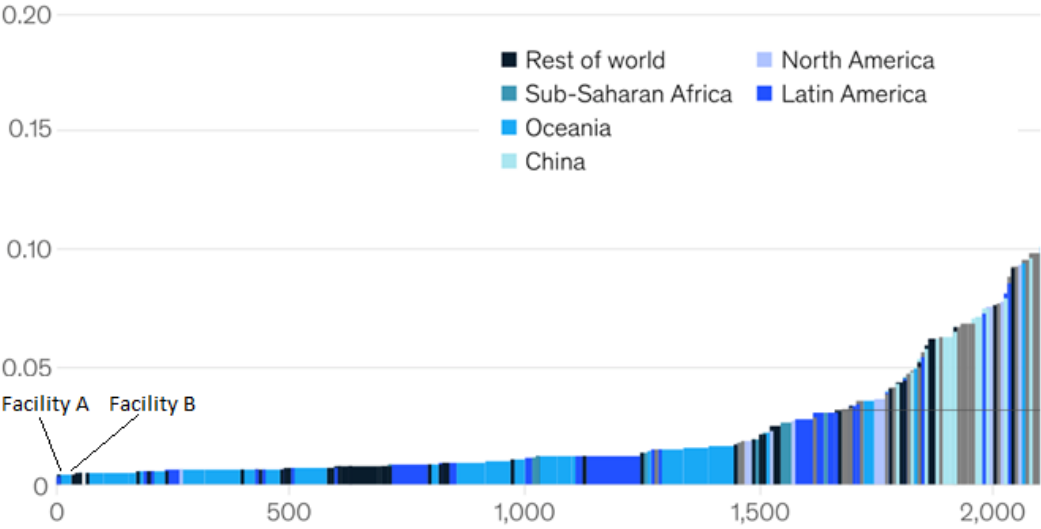
Where practical, two years of data will be sourced from at least two facilities. The benchmark will then be set at the production-weighted average emissions intensity of this data.

In summary, the high level steps are:

1. Identify potential best practice facilities.
2. For each potential best practice facility, collect data and divide emissions by production to work out its emissions intensity, ignoring any offsetting.
 - a. If emissions from the facility are associated with more than one production variable, only emissions relevant to the production variable would be used in the emissions intensity calculation. Any apportioning would be consistent with how industry average emissions were calculated.
 - b. If necessary, adjust the emissions intensity for Australian conditions. Revisit step 1- Identify best practice facilities to check that the adjusted emissions intensity value doesn't alter the facility being a potential best practice facility.
3. Calculate a production-weighted average emissions intensity.
 - a. Use at least two facilities, ensuring their combined annual production is at least 10 per cent of the combined annual production of all relevant Safeguard facilities.
4. Compare the emissions intensity calculated in step 3 to the top 10 per cent Australian performance and select whichever value is lower.
5. For fossil fuel production variables, compare the value to relevant methane standards. If the standards are more stringent than the benchmark, adjust to account for the standard.

Steps 1-3 are explained below using a theoretical example:

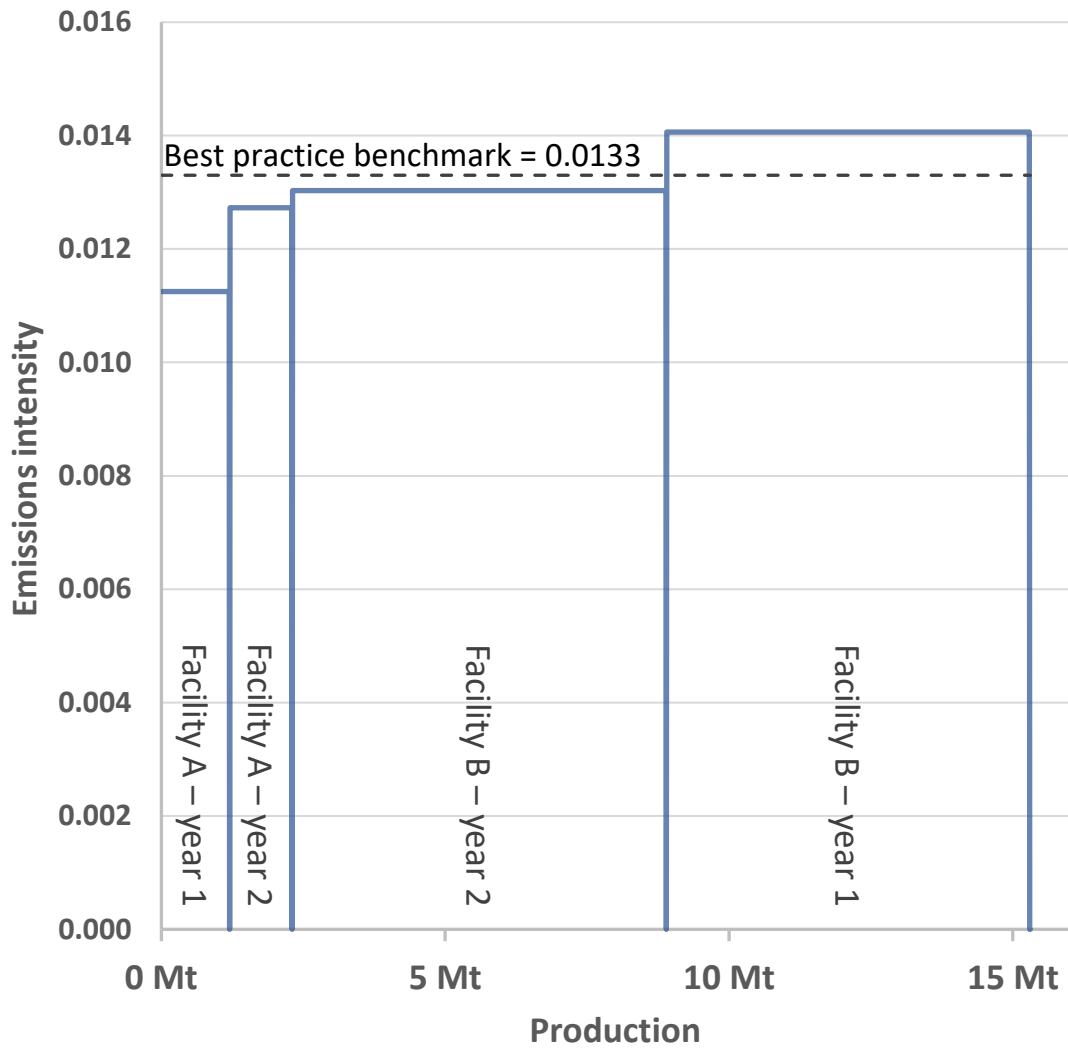
Step 1-Identify best practice facilities: Based on published emissions intensity curves, facilities A and B are the potential two best practice facilities. In the following example, each bar in this graph is the emissions intensity of production for the facilities operating in the world.



Step 2-Collect data and calculate an emissions intensity. For example, the following production and emissions for facilities A and B is used to calculate emissions intensity.

Best practice facility and year	Production (million tonnes)	Emissions (t CO ₂ -e), ignoring any use of offsets	Emissions intensity (t CO ₂ -e per t production)
Facility A – year 1	1.2	13,500	0.011
Facility A – year 2	1.1	14,000	0.013
Facility B – year 1	6.4	90,000	0.014
Facility B – year 2	6.6	86,000	0.013

Step 3- Calculate the production weighted emissions intensity. An illustration of how to do this calculation is shown for facilities A and B below.



2 Details for setting international best practice benchmarks

This section outlines the proposed approach to set international best practice benchmark emissions intensities. If there are circumstances for which it is not practical to implement this approach in full for a production variable, the department must have regard to the four framework principles outlined above: the benchmark should be determined in a way that is effective, consistent, practical and robust.

2.1 Identifying the best practice facilities and data suitability

Emissions data should be consistent with NGERs and ignore any offsetting. Production data must be consistent with Safeguard production variables.

The best practice benchmark will be based on the facilities that have the lowest emissions intensity of production, located anywhere in the world, for which data can be sourced that is appropriate for setting the benchmark. Requirements for selecting the best practice facilities are:

1. Emissions data should be consistent with relevant international reporting standards, and ignore any offsetting.
2. Production data should be consistent, in material respects, with Safeguard production variables.
3. The facility should have commercial-level production using technologies applicable to Safeguard facilities, which rules out setting the benchmark on:
 - pilot or demonstration plants unlikely to be of a similar scale to a Safeguard facility;
 - highly subsidised production that would not otherwise be commercially viable; or
 - plants under construction or being commissioned, requiring its emissions intensity to be estimated or modelled.
4. The selected facility's data should be suitable, which means that emissions associated with the product should match the emissions included and excluded from the Safeguard production variables as described in the [Safeguard Mechanism Document](#). For example, the emissions should exclude electricity and Scope 2 and 3 emissions; and multi-product facilities should apportion emissions between the products in a way consistent with the Safeguard Mechanism.

If sufficient detail is available, then emissions accounting adjustments can be made to ensure data is suitable for calculating the best practice benchmarks. For example, to adjust for a different GWP, different production units or include an estimate of emissions from a greenhouse gas not covered by overseas reporting arrangements.

Ideally, the best performing facilities used to calculate the benchmark will have the lowest emissions intensity of all facilities. However, in most cases it will not be practical to obtain the emissions intensity of every facility in the world, estimated consistently with the principles above, and rank them all. As such, reasonable estimates and assumptions may be used for the purpose of identifying representative facilities. Data from facilities may also be used if their emissions intensity is expected to be close to the best performing facilities.

2.2 Data should be appropriate for the Safeguard context

In the Safeguard context the electricity production variable means on-site electricity to support an industrial facility, not a grid-connected or utility scale generator.

The best practice benchmarks will use the production variables already defined for the industry average emissions intensities, which are used for setting the baseline for existing facilities.

The international best practice benchmark should be based on data appropriate for the context for how a production variable applies to Safeguard facilities. For example, electricity is a production variable, which applies to on-site electricity generation at a Safeguard facility. Safeguard facilities have on-site electricity generation to reliably meet the demand of their facilities, typically at a location remote from an electricity grid. This means the international best practice benchmark should be based on on-site electricity generation at industrial facilities, not grid-connected or utility-scale generators.

In circumstances where a combination of production variables is likely to be used at one or more new facilities, consideration could be given to what is 'best practice' in terms of global facilities that undertake the same activities, when selecting best practice facilities for calculating the benchmark.

2.3 Time period for selecting data

Use two recent years data for each best practice facility.

Benchmarks will be set based on recent data for existing facilities, rather than, for example, forecasts of the emissions intensity for anticipated technologies. Technological developments will, in many cases, reduce the emissions intensity of the best performing technologies over time, but this is reflected in the baseline decline that applies to all Safeguard facilities.

Two years of suitable data will be sourced for each of the potential best practice facilities to help account for year-on-year emissions intensity variations. If more than two years of data is available, then the two most recent years of normal operation will be used. It doesn't matter if the data is for calendar or financial years, or some other time basis.

2.4 Number of facilities to use in the benchmark calculation.

Use a minimum of two facilities, and more if their combined annual production is less than 10 per cent of the annual production of Safeguard facilities. If there are at least five facilities in Australia that engage in production, a minimum of three facilities would be used.

The best practice benchmark is calculated from at least two facilities to help preserve the confidentiality of facility-level data. For production variables for which there are a large number of facilities, it makes sense to use more facilities to set the benchmark. As such, if there are at least five facilities in Australia that use the relevant production variable, at least three facilities would be used.

If the combined annual production of the selected facilities is less than 10 per cent of the combined annual production of all relevant Safeguard facilities or less than the production of the smallest

Safeguard facility in Australia (i.e. the facility with the lowest production for that production variable), then additional facilities should be selected until this threshold is reached.

This approach, including the requirement for the total annual production to be at least 10 per cent of the annual production of relevant Safeguard facilities and at least the annual production of the Safeguard facility with lowest production, helps ensure that the calculation is based on a sufficient scale of production that is representative of sectoral best practice.

2.5 Adjusting for Australian conditions

Adjust for geology and climate, but not the availability of skills or technology. Review if the facility is still best practice after adjustment.

Adjustments for Australian conditions will be made if the relevant international facility has characteristics impossible to replicate in Australia, and this has a material impact on achieving best practice emissions intensity. Two aspects are relevant:

- **Geology:** If the international best practice facility processes or uses a geological resource that is not available anywhere in Australia, such as some types of conventional geothermal resources.
- **Climate:** If the ambient conditions of the international best practice facility cannot be replicated in a practical way, anywhere in Australia, and these conditions are materially relevant to the facility's emissions. For example, less energy is required to liquefy natural gas in colder climates.

The emissions intensity would not be adjusted for skills or technology. There shouldn't be an adjustment for a lack of technology or skills in Australia because, given demand, technology and skills could be procured or developed. Developing these skills is fundamental to transition to a low emissions economy.

Any adjustment for Australian conditions should be made in a transparent (where appropriate for commercial sensitivities) and robust way (e.g. citing emissions reporting standards or scientific studies). If this isn't possible, then it may be necessary to exclude the facility from the best practice benchmark calculation, requiring it to be replaced with another.

The adjustment for Australian conditions may mean the relevant international facility no longer has best practice emissions intensity, and it should be replaced by another facility or facilities that have better emissions intensity.

Selecting the relevant facilities for setting the best practice benchmark will be an iterative process if adjustments for Australian conditions are necessary.

2.6 Best practice benchmarks cannot be higher than domestic best practice

It is proposed that best practice benchmarks cannot be less stringent than domestic best practice. This further ensures that benchmarks reflect Australian conditions, and helps to manage issues with data availability.

In some situations, it may be difficult to source suitable data for the best practice facilities, resulting in a benchmark unrepresentative of international best practice. Setting a maximum emissions intensity based on the average of the top 10 per cent of domestic performance helps to address the situation of limited data, for production variables where sufficient data is available. The same data used for calculating the average sectoral emissions intensities can be used for the domestic best practice emissions intensity calculation.

Other jurisdictions such as Alberta, British Columbia, California and the EU have benchmarking schemes for emissions. If there are issues with data availability, benchmarks developed in other jurisdictions could be considered on a case-by-case basis if they are sufficiently robust and consistent with the approach described in these guidelines.

3 Process for setting benchmarks

Adhering to these guidelines, the Department will engage a consultant to:

- Identify best practice facilities and source suitable production and emissions data for each Safeguard Mechanism production variable.
- Scrutinise the circumstances of the best practice facilities to recommend if an adjustment for Australian conditions is required, and if required, justify the adjustment approach and perform the adjustment.

In parallel, the Department will calculate the domestic top 10 per cent best practice emissions intensity and engage an independent peer review of these calculations. These emissions intensity values will be a ceiling for the best practice benchmark.

The Department will compare the domestic top 10 per cent best practice emissions intensity to the best practice benchmarks worked out by the consultant and select the lowest value.

The Department will draft an amendment rule to insert the best practice benchmarks into Schedule 1 of the Safeguard Rule and release an exposure draft and explanatory document for public consultation. Legislation for the first set of amendments will be consulted on in late 2023.

The explanatory document will include details of the process followed compared to these guidelines, any adjustments for Australian conditions (while protecting the confidentiality of facility-level data), and if the values were based on domestic top 10 per cent best practice performance. The names and data of relevant facilities will be kept confidential.

The Minister for Climate Change and Energy will consider and if satisfied make the amendment to the Safeguard Rule to legislate the benchmark values.

3.1 Timing

For priority production variables, likely to be needed to calculate 2023-24 baselines the Government will aim to legislate best practice benchmarks by end 2023. Further benchmarks will be developed in 2024 for new or amended production variables as needed.