



Response to Submissions

Safeguard Mechanism: Prescribed capture efficiency rate

Landfills

April 2021

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1. INTRODUCTION

The Department appreciates the solid waste industry’s engagement in the process of setting the prescribed capture efficiency rate in section 54 of the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* (the Safeguard Rule)¹.

The Department received six submissions in response to the February 2021 targeted consultation paper. Most submissions presented a case for Option 2 (ie, not weighting by amount of landfill gas generated when calculating the industry average) over Option 1 (ie, weighting the records by landfill

¹ Available here: <https://www.legislation.gov.au/Details/F2020C00926>

gas generated), none made the case for supporting Option 1, and one proposed a 30 per cent default gas capture rate.

In summary, the Department acknowledges the views expressed during consultation that landfill gas generation is not an accurate proxy of production, but rather a result of a variety of factors which had no relation to the waste disposal service, such as geographic location. As such, the Department does not intend to progress with Option 1.

Given the supporting evidence put forward in most submissions for Option 2, as well as the timeframe for seeking to make the prescribed capture rate available this year or early next year, the Department has progressed to the next step of independent technical assessment of the calculation of the prescribed capture efficiency rate under Option 2. This allows for industry to consider a precise capture efficiency rate rather than the range that was included in the February 2021 consultation paper.

The purpose of this Response to Submissions Paper is to present the outcomes of the independent technical assessment (section 2 of this document), respond to the issues raised in submissions, (section 3 of this document) and set out next steps for setting the default gas capture rate, including the provision of a further opportunity for interested stakeholders to provide input (section 5 of this document).

This response document also reminds industry about the double counting provisions that are part of the Safeguard legal framework (see section 4 of this document). This is relevant for any landfill that becomes covered by the Safeguard Mechanism and also has an Emissions Reduction Fund (ERF) project that is credited ACCUs.

2. INDEPENDENT TECHNICAL ASSESSMENT

The Department engaged GHD to review the calculation of the draft prescribed capture efficiency rate. Copied below is GHD's executive summary on the outcomes of the independent technical assessment. This assessment was completed in April 2021. The Department is unable to provide the full GHD report to the landfill sector because it contains and discusses confidential NGER reported data. With this knowledge, the Department asked GHD to prepare an executive summary to the report that does not include sensitive company-specific data so that it could be released to the landfill sector.

Executive Summary to GHD's report on the calculation of the prescribed capture efficiency rate:

'Under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule (Safeguard Mechanism Rule), the person with operational control of a landfill may apply for a 'Landfill baseline determination' calculated using the formula specified at section 54(3). The formula requires the setting of a prescribed capture efficiency rate for non-legacy greenhouse gas emissions. The prescribed capture efficiency rate will be set out in the Safeguard Mechanism Rule.

The Department of Industry, Science, Energy and Resources (DISER) has calculated a draft prescribed capture efficiency rate. DISER then commissioned GHD Pty Ltd to independently review the draft prescribed capture efficiency rate for use in the calculation of a landfill baseline determination.

GHD Pty Ltd (GHD) reviewed the methodology used for performing the calculation as well as checked the arithmetical accuracy of the calculations.

GHD's findings were:

Calculation methodology

- The use of historical data from financial years 2013 to 2017 inclusive for calculating the rate was agreed by GHD. This is consistent with data sets used by DISER for determining other non-landfill baseline default values. Data was extracted from the National Greenhouse and Energy Reporting (NGER) reports submitted to the Clean Energy Regulator (CER) and contained in the CER database.
- The data was confirmed to come from the 'AR5' dataset, that is, all emissions and landfill gas generation data from the CER database had been converted to using the revised Global Warming Potentials, as per the 5th Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). Using a common reference database for the calculations was agreed by GHD.
- A small number of data points were excluded from the calculations based on potential errors with the data or for landfills with emissions below 25,000 tonnes of carbon dioxide equivalent (t CO₂-e). The exclusions, and justification of the exclusions, were agreed by GHD.
- The data used in the calculations was 50% of the total data set, centred around the median. This eliminates the bottom 25% and top 25% of the data sets. The method was used for determining baseline default values for non-landfill industries, and the method was agreed by GHD as appropriate.
- The method for calculation of the prescribed capture efficiency rate, based on the NGER data for total Scope 1 emissions and landfill gas generated, was agreed by GHD.

Calculation accuracy

- GHD found that the calculation of the prescribed capture efficiency rate contained a minor non-material error (one missed data point and inclusion of one other data point which should have been excluded).
- The recalculated prescribed capture efficiency rate of 0.372 was agreed by GHD.
- GHD found that the prescribed capture efficiency rate of 0.372 is suitable for use in determining the baseline number under section 54(3) of the Safeguard Mechanism Rule.'

The Department accepts the outcome of the technical assessment and calculates the prescribed capture efficiency value to be **0.372**, in agreement with GHD's findings.

3. ISSUES RAISED IN SUBMISSIONS TO THE FEBRUARY 2021 TARGETED CONSULTATION PAPER

Relevant landfill facilities

Submissions confirmed that there are expected to be a limited number of landfill facilities, in the range of four to seven, that are likely to reach the 100,000 tonne non-legacy scope 1 emissions coverage threshold in the near to medium term. The prescribed capture efficiency rate will be relevant for these landfills.

Operation of Landfill Baselines: no obligation to capture a fixed amount of landfill gas

The Safeguard Mechanism places no legal obligation on a facility to capture a fixed amount of gas. The obligation is instead to keep a facility's net emissions below a baseline emissions limit (expressed in tonnes of CO₂-e emissions per year). Flexible compliance options are available, such as multi-year monitoring periods² and surrendering Australian Carbon Credit Units (ACCUs). More information is available on the Clean Energy Regulator's [website](#).

Landfill baselines set under section 54 of the Safeguard Rule are determined using the prescribed capture efficiency rate. In essence, the prescribed capture efficiency rate is subtracted from 1, and then multiplied by the landfill's total landfill gas generation in the year the baseline is to apply to.³ This means that if a landfill's capture efficiency rate is higher than the prescribed capture efficiency rate, its landfill baseline would more than cover its emissions for the year, and it would not need to undertake any additional compliance activities. If the facility's capture efficiency rate is below the prescribed capture efficiency rate, its baseline would not cover its emissions in that year, and it would need to consider other compliance options, such as purchasing and surrendering ACCUs, entering into a multi-year monitoring period, or installing or upgrading a gas capture system (potentially supported by the Emissions Reduction Fund) to bring its net emissions down to its baseline.

A facility would need to apply to the Clean Energy Regulator for a baseline if it reaches the Safeguard Mechanism's coverage threshold of 100,000 tonne non-legacy scope 1 emissions.

Appendix A includes a worked example of the calculation of a landfill baseline.

Reflecting landfill circumstances

The landfill baseline is not a fixed number, but adjusts each year reflecting the site-specific estimation of non-legacy landfill gas generated at the landfill, as reported to NGERs.

Using a ratio avoids the baseline being set assuming a fixed amount of capture, which would not reflect a landfill's circumstances.

Landfill-specific characteristics are taken into account when reporting total non-legacy scope 1 emissions from a landfill facility under NGERs, and it is this value that is used (in combination with the prescribed capture efficiency rate) to determine the facility's baseline in a year. In this way, the approach seeks to take into account facility-specific circumstances while maintaining compliance

² Multi-year monitoring periods allow a facility to make up for a baseline exceedance in one year by reducing its emissions, or surrendering ACCUs (or both) in the following one or two years.

³ An adjustment for oxidisation is also made.

with the Framework Principles—which do not support ex-post adjustments for location, inputs, and technologies used.

Relationship with the Carbon Credits (Carbon Farming Initiative – Landfill Gas) Methodology Determination 2015

The way the prescribed capture efficiency rate is set is not based on the concept of additionality, which is used in the Emissions Reduction Fund (ERF) for determining abatement that can be credited under an offsets project. The ERF methodology refers to a “baseline”, which is the theoretical scenario of what emissions would have occurred in the absence of the ERF project. This baseline is compared to a post-upgrade emissions level to determine the amount of additional abatement that is delivered by the project. The independent Emissions Reduction Assurance Committee (ERAC), with reference to the Offset Integrity Standards, has set the ERF method baseline at 30 per cent for most projects (for more information see the ERAC’s [website⁴](#)).

This ERF “baseline” term is distinct from a baseline set under the Safeguard Mechanism. Baselines set under the Safeguard Mechanism are emissions limits that apply to facilities that emit over 100,000 tonnes of scope 1 emissions in a year. Covered facilities have a legislated obligation to keep net emissions below their baselines. Baselines under the Safeguard Mechanism are not set with reference to the concept of additionality. They are instead set with reference to the prescribed gas capture rate that is intended to represent industry average performance.

Suitability of the NGER dataset to set the prescribed capture efficiency rate

An important consideration is that the data used to estimate the prescribed capture efficiency rate is consistent with how emissions are reported under the NGERs framework. This is because the prescribed capture efficiency rate will be used to calculate a facility’s baseline, which is then compared to its reported NGER emissions.

For example, if the capture rate was instead based on a ‘scientific’ analysis of the landfill, with no reference to the NGER reporting framework, then there is a risk that it could be determined to be above 75 per cent. A landfill’s reported covered emissions would likely exceed its baseline set using a default value over 75 per cent, because under some NGER reporting methods the amount of methane generated is not more than 75 per cent of the amount captured.

Feedback in some submissions indicated that the Option 2 approach to calculating the prescribed capture efficiency rate better takes into account facility-specific circumstances because it does not weight the value by volume of landfill gas generated, where a large volume could be associated with a certain set of landfill characteristics.

Amendments to the NGER Measurement Determination

The NGER Measurement Determination is updated regularly to reflect improvements in emissions estimation methods and to provide clarifications. Amendments that came into effect in 2016-17 introduced a new set of homogeneous waste streams as well as provided clarifications on reporting requirements and default value selections and minor corrections to waste mix type names.

The 2016-17 records included in the dataset for working out the prescribed capture efficiency rate show no evidence of a step-change deterioration in capture efficiency, so there is not a strong case for excluding the 2012-13 to 2015-16 records. Omission of this data would also have been inconsistent with the policy framework.

⁴ <https://www.industry.gov.au/about-us/emissions-reduction-assurance-committee>

The capture rate calculation and units

A concern was raised that the capture rate may have different inputs in the numerator and denominator, and not be a well-expressed percentage.

The prescribed capture efficiency rate can be described as a ratio or percentage of quantities of landfill gas because the units in the numerator and denominator are the same, i.e. tonnes of carbon dioxide equivalent, resulting in a unit-less ratio. The capture efficiency rates used to determine the prescribed capture efficiency rate are worked out as emissions reported in year t (the numerator) and the estimate of landfill gas generation in the same year t (the denominator).

Importantly, the same NGER reporting processes used to derive the values used in the calculation of the prescribed capture efficiency rate will also be used to derive (a) facility emissions numbers that will be used to calculate landfill facilities' baselines, and (b) facilities' scope 1 non-legacy emissions (which will be compared against baselines to determine a facility's compliance position).

One submission noted that a capture efficiency rate set as a fixed percentage figure is advantageous from the perspective of landfills being able to have certainty about their obligations going forward.

Application of uncertainty thresholds

One submission raised a concern that the NGER estimates include an uncertainty threshold of +/- 35%.

The purpose of Part 8 of the NGER Measurement Determination is to ensure that the emissions estimate range contains the true value with a 95% confidence level, with the reported figure more likely to lie near the true value than at the outer limits of the uncertainty range. The uncertainty range helps inform Australia's National Greenhouse Accounts. It is not published annually nor as part of the publication of information about Safeguard facilities. The uncertainty estimate is not part of the calculation of sectoral averages.

Basing the calculation of the prescribed capture efficiency rate on the 50 per cent of records centred on the median unit also means that any outlier values are excluded.

Completeness of dataset

Some stakeholders noted that the Department's data set does not include non-NGER reporting landfills.

The NGER framework only covers businesses that meet certain size thresholds, so there are some landfills that do not report under NGERs. However the size limits also mean the facilities reporting to NGERs can be considered part of the peer group for Safeguard facilities. Past WMRR survey data estimates there may be around 40 large landfills in Australia, defined as receiving at least 100,000 tonnes per annum. Based on this, the NGER records have strong sectoral coverage. The consultation process also involved peak bodies reaching out to their members about the Safeguard, and the stakeholders that came forward indicating they may be covered in the future also report to NGERs. Given this, the dataset is assessed as being suitable for setting the default sectoral average.

Relying on NGER-reported data is consistent with the approach being taken for the calculation of industry average emissions intensity values for other Safeguard-covered sectors. As described above, there could also be problems with including capture efficiency records in the dataset that weren't worked out with NGER reported data.

Timing for setting the prescribed capture efficiency rate

The Department heard from a small number of businesses who indicated that they may have facilities that could become covered by the Safeguard Mechanism this year (2020-21). It would be ideal to provide such facilities the option to set a new landfill baseline for the 2020-21 year using the prescribed capture efficiency value, noting that some facilities may have an existing Reported baseline in place for the 2020-21 year, and that other compliance options are available, such as multi-year monitoring periods. To allow time for proper consultation on the exposure draft legislation that will set the capture rate in the Rule, it may be appropriate to set the rate in the Rule in time for the 2021-22 year—with baseline applications due for that year before the end of October 2022.

Some questions were raised during consultation over the last three months about alternative baseline setting approaches. The Department notes that setting a landfill baseline (under section 54 of the Safeguard Rule) would be administratively simple and less costly compared to the alternative of applying for a transitional calculated baseline (under Section 26A of the Safeguard Rule). If a facility is eligible to apply for a transitional calculated baseline, it would be required to develop its own production variable and default emissions intensity value, consistent with legislative requirements (see for example section 5 of the Safeguard Rule⁵), and have an audit report prepared for the baseline application (for more information see the Clean Energy Regulator's [website](#)⁶). A transitional calculated baseline is a fixed number that does not adjust each year with the level of landfill gas produced, so it is not a long-term solution for an operational landfill whose covered emissions are increasing. That a landfill could only apply for a transitional calculated baseline in the 2020-21 year further indicates a landfill baseline (set under section 54 of the Rule and using the prescribed capture efficiency rate) is the mechanism through which landfills will have access to new baselines. Finalising the default capture efficiency rate is required to allow facilities to apply for new landfill baselines.

4. DOUBLE COUNTING PROVISIONS FOR SAFEGUARD FACILITIES THAT EARN ACCUS

What is double counting?

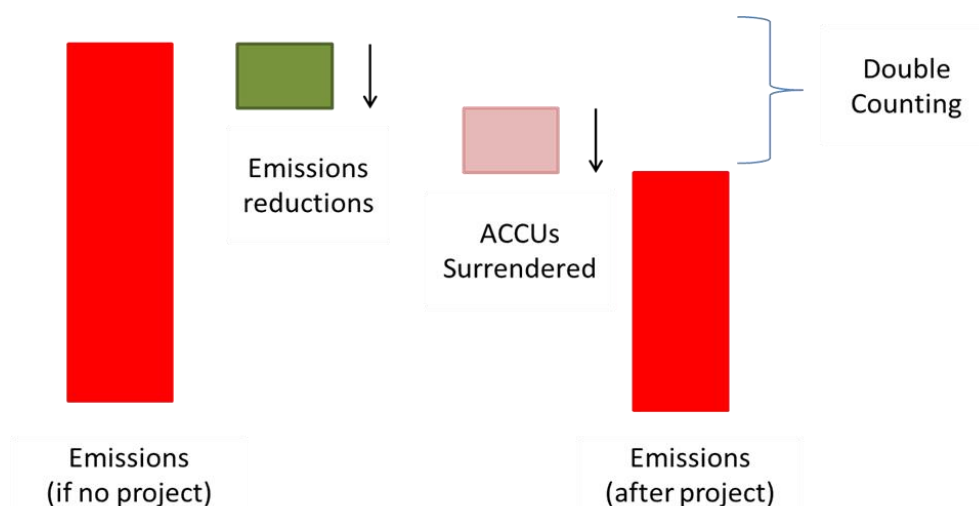
Safeguard facilities, including landfills, are eligible to participate in the ERF crediting and purchasing mechanisms in the same way as other businesses. They can create ACCUs from eligible emissions reduction projects, and can bid for funding in an ERF auction or sell their ACCUs to other parties. This raises the possibility that emissions reductions could be counted twice ('double counted').

Double counting could occur if a Safeguard facility receives ACCUs for reducing its emissions, then surrenders these ACCUs to further reduce its net emissions under the Safeguard Mechanism (see Figure 1).

⁵ Available here: <https://www.legislation.gov.au/Details/F2020C00926>

⁶ <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Calculated-baseline>

Figure 1. Double counting situation



In this way, a tonne of emissions reduction could be counted twice. First, when the actual reduction in emissions occurs—with that reduction resulting in the crediting of ACCUs. Then again when these ACCUs are surrendered and deducted from the net emissions number⁷ of the facility.

Double counting could also occur if a Safeguard facility receives ACCUs for reducing emissions and sells or gives them to another Safeguard facility for use as an offset. The emissions reduction is counted twice, because it reduces emissions at both facilities—the first facility's actual emissions fall, while the second Safeguard facility uses the ACCUs to reduce its net emissions.

How is 'double counting' prevented?

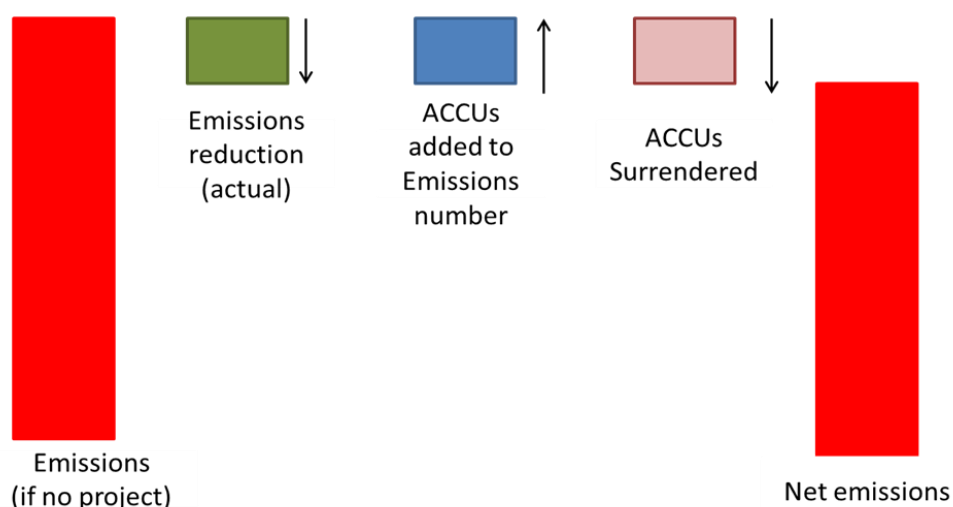
To ensure Safeguard facilities can participate in the ERF, the potential double counting issue was addressed at the commencement of the Safeguard Mechanism in 2016. The ERF legislation⁸ ensures that emissions reductions are not counted more than once—it does this by adding ACCU's issued in relation to a Safeguard facility back on to that facility's net emissions.

If the same facility uses these ACCUs as an offset under the Safeguard Mechanism, or they are sold to the Government under an ERF contract, the facility's net emissions are correspondingly reduced.

⁷ A facility's net emissions number is its Safeguard-covered emissions after taking into account any ACCUs that are related to the facility. See Part 3H of the [National Greenhouse and Energy Reporting Act 2007](#) for more details.

⁸ See Division 4 of the *National Greenhouse and Energy Reporting Act 2007*, available here: www.legislation.gov.au/Details/C2019C00263

Figure 2. Double counting solution



ACCUs issued are added to the facility's net emissions number in the relevant financial year.

There are two ways that ACCUs can be used as offsets to reduce the net emissions at a facility.

- A facility can **surrender ACCUs to the Government** as an offset under the Safeguard Mechanism. The reduction in net emissions will occur at the facility that surrenders the ACCUs. For example, if the ACCUs are sold or given to a second facility covered by the Safeguard Mechanism and that facility surrenders them to the Government, the ACCUs would offset the net emissions from the facility that surrendered them, not the facility that generated them.
- Alternatively, ACCUs can be **sold to the Government under an ERF contract**. The reduction in net emissions will occur at the facility that generated the ACCUs, regardless of whether the ACCUs were sold to the Government by the facility itself or by another party. This is relevant for landfills that may have an ERF project operated by a third party that sells ACCUs under a Government ERF contract.

5. CONSULTATION AND NEXT STEPS

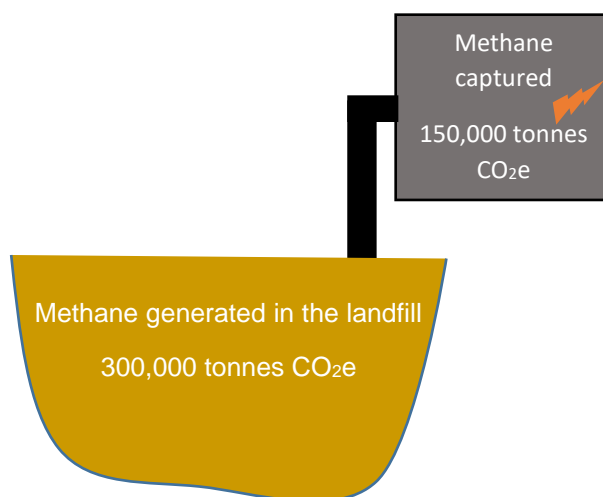
The Department again thanks stakeholders for engaging in this process and providing valuable insights into the operation of landfills and the structure of the sector.

With the independent technical assessment complete (see section 3 of this paper), the Department can include the prescribed capture efficiency rate in an exposure draft legislative instrument that, following consultation, can be used by the Minister for Energy and Emissions Reduction to set the prescribed capture efficiency rate in the Safeguard Rule, making it available for use in baseline applications. The exposure draft legislation is intended to be released for public consultation in the second half of this year, subject to a decision by the Minister for Energy and Emissions Reduction, and interested stakeholders, including those outside the waste sector, will be able to make submissions to the Department on the proposed capture efficiency rate. These submissions will be published on the Department's website.

Should you have any questions on this paper or the process from here, please contact the Safeguard and Industrial Policy Team through safeguard.mechanism@industry.gov.au.

Appendix A: Example baseline calculation

Example landfill opened after 2016, so methane generated is non-legacy waste emissions



The methane released from this example landfill is worked out as:

$$(300,000 - 150,000) \times (1 - OF) = 135,000 \text{ t CO}_2\text{-e}$$

So, its reported emissions for this year are 135,000 t CO₂-e and it is therefore covered by the Safeguard Mechanism (because its non-legacy scope 1 emissions are above 100,000 t).

The landfill baseline is a number worked out as:

$$\text{Non-legacy methane generated} \times (1 - BC) \times (1 - OF)$$

If the prescribed capture efficiency rate BC is [0.372] (noting that BC has not yet been set in the Safeguard Rule, so is presented here as an example), then the landfill's baseline number for this year is:

$$300,000 \times (1 - [0.372]\%) \times (1 - 0.1) = 169,560 \text{ t CO}_2\text{-e}$$

For this year, the landfill's reported emissions of 135,000 is below its safeguard baseline of 169,560 t CO₂-e. It therefore does not need to take any additional compliance measures under the Safeguard Mechanism.