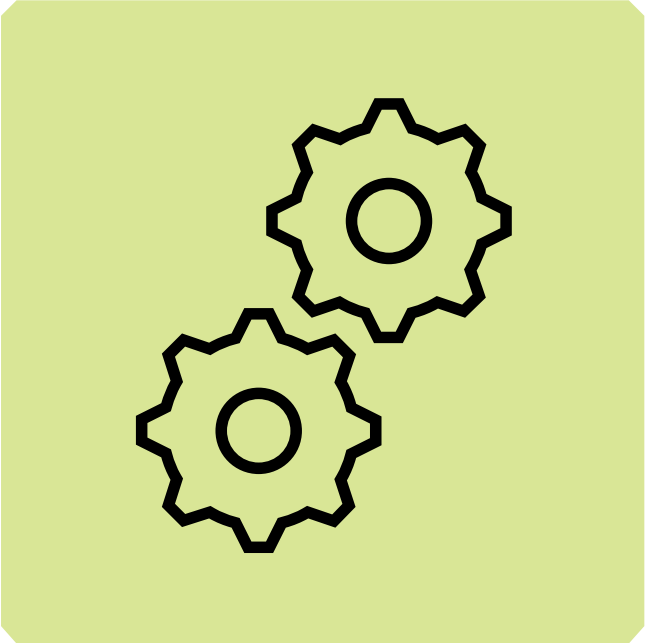
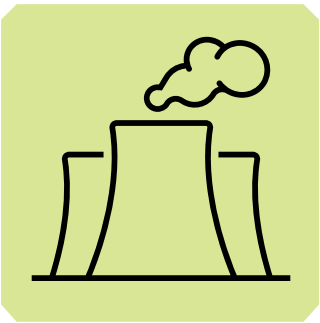
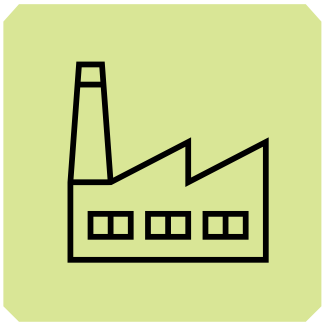
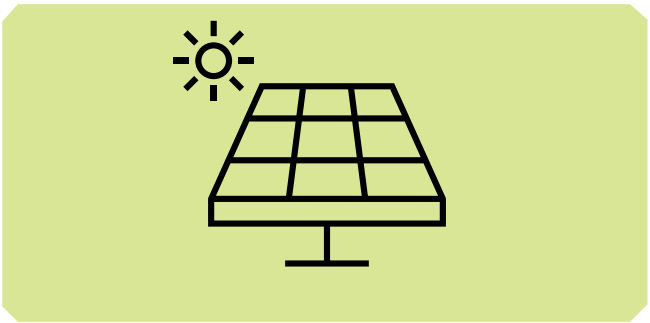
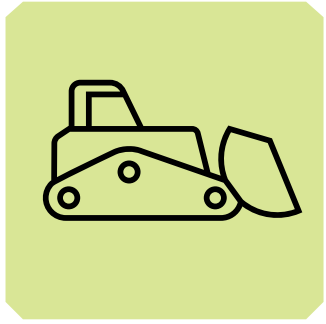
Australian Government
Clean Energy Regulator



Reporting petroleum-based oils and greases (other than petroleum-based oils and greases used as fuel) guideline

August 2025

National Greenhouse and Energy Reporting

Contents

Definitions and Abbreviations

Term	Meaning
Consumption of energy	In relation to a facility, means the use or disposal of energy from the operation of the facility, including (as per 2.26 of the NGER Regulations): » own-use » losses in extraction, production and transmission.
EERS	Emissions and Energy Reporting System
Energy	Includes the fuels and other energy commodities listed in Schedule 1 of the NGER Regulations.
Facility	Has the meaning given by section 9 of the NGER Act. For more information on defining a facility under the NGER scheme, see What is a Facility[1].
Fuel	A substance mentioned at items 1–57 in Schedule 1 of the NGER Regulations.
kL	Kilolitres
L	Litres
NGER	National Greenhouse and Energy Reporting
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
NGER Measurement Determination	National Greenhouse and Energy Reporting (Measurement) Determination 2008
NGER Regulations	National Greenhouse and Energy Reporting Regulations 2008
PBO	Petroleum-based oils
PBG	Petroleum-based greases
Reporter	An entity required to report emissions and energy production and consumption to the Clean Energy Regulator under section 19, 22G, or 22X of the NGER Act
Scope 1 emissions	Part 2.23 of the NGER Regulations, means the release of greenhouse gas into the atmosphere as a direct result of an activity or series of activities (including ancillary activities) that constitute the facility.

[1] https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/assess-your-obligations#what-is-an-nger-facility

Term	Meaning
t CO_2-e	Tonnes carbon dioxide equivalence

Terms in NGER legislation may have specific meanings within the law. These key words and phrases are normally identified under a heading such as Definitions, Interpretation or Dictionary or in other parts of the document.

For more information on interpreting legislation see Federal Register of Legislation - Understanding Legislation[2].

[2] https://www.legislation.gov.au/help-and-resources/understanding-legislation/reading-legislation

Disclaimer

This guideline has been developed by the Clean Energy Regulator (CER) to assist entities to comply with their reporting obligations under the *National Greenhouse and Energy Reporting Act 2007*[3] (NGER Act) and associated legislation.

This guideline only applies to the 2024–25 NGER reporting year and should be read in conjunction with the NGER Act, National Greenhouse and Energy Regulations 2008[4] (NGER Regulations), and National Greenhouse and Energy Reporting (Measurement) Determination 2008[5] (NGER Measurement Determination), as in force for this reporting period. These laws and their interpretation are subject to change, which may affect the accuracy of the information contained in the guideline.

The guidance provided in this document is not exhaustive, nor does it consider all circumstances applicable to all entities. This guidance is not intended to comprehensively deal with its subject area, and it is not a substitute for independent legal advice. Although entities are not bound to follow the guidance provided in this document, they must ensure they meet their obligations under the National Greenhouse and Energy Reporting (NGER) Scheme[6] at all times. CER encourages all users of this guidance to seek independent legal advice before taking any action or decision based on this guidance.

CER and the Australian Government will not be liable for any loss or damage from any cause (including negligence) whether arising directly, incidentally, or as consequential loss, out of or in connection with, any use of this guideline or reliance on it, for any purpose.

If an entity chooses to meet their obligations under the NGER scheme in a manner that is inconsistent with the guidance provided in this document, CER, or an independent auditor, may require the entity to demonstrate that they are compliant with requirements of the NGER Act, NGER Regulations, and/or the NGER Measurement Determination. Entities are responsible for determining their obligations under the law and for applying the law to their individual circumstances.

[3] https://www.legislation.gov.au/Series/C2007A00175
[4] https://www.legislation.gov.au/Series/F2008L0223
[5] https://www.legislation.gov.au/Series/F2008L02309
[6] https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme

2024–25 updates

Changes in this document for the 2024–25 reporting year:

- Minor stylistic and formatting changes have been made to this document.

Read about the changes to the NGER Legislation for the 2024–25 reporting period[7].

1. Introduction

This document aims to assist you to report emissions and energy consumption associated with the use of petroleum-based oils (PBOs) and petroleum-based greases (PBGs) under the NGER Act. This guideline covers estimating emissions and energy from PBOs and PBGs **when they are used as lubricants or consumed without combustion**.

PBOs and PBGs used as lubricants are considered to have undergone a degree of oxidation and are therefore reported under the 'fuel combustion' source category. The emissions and energy consumption of PBOs or PBGs when used as lubricants needs to be reported at a facility if one or more separate instances of the source 'combusts' more than 5 kilolitres (kL) of PBO or PBG during a reporting year. The methods for reporting PBOs and PBGs used as lubricants are listed under section 2.40A of the NGER Measurement Determination.

The consumption of PBOs or PBGs without combustion must be reported at a facility if one or more separate instances of the source consumes more than 15 kilolitres (KL) of a PBO or PBG during a reporting year. Energy consumption reporting requirements are set out in section 2.68 of the NGER Measurement Determination.

It is important to note that PBOs and PBGs used for all purposes, including transport, should be reported under the NGER Legislation if the amount used is above the relevant threshold.

If the PBO or PBG is 'used as a fuel', read section 3.4.5 of the Estimating emissions and energy from fuel combustion guideline[8] for reporting the associated emissions and energy.

If there is any doubt regarding obligations for the estimation and reporting of PBOs or PBGs, or the currency of this guideline, contact us[9]. General NGER reporting aspects across industry sectors, such as defining facilities or using the Emissions and Energy Reporting System (EERS), are not covered in this guideline. See NGER Reporting Guides[10] for more guidance.

[7] https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/report-emissions-and-energy/amendments
[8] https://cer.gov.au/document_page/estimating-emissions-and-energy-fuel-combustion-guideline
[9] https://cer.gov.au/about-us/contact-us
[10] https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/report-emissions-and-energy/nger-reporting-guides

2. What are petroleum-based oils and petroleum-based greases?

PBOs and PBGs are listed as a fuel in Schedule 1 of the NGER Regulations with the energy content and emissions listed in Schedule 1 of the NGER Measurement Determination. The quantity of PBOs and PBGs consumed at a facility must be measured and, providing thresholds are met, included in reports submitted in compliance with the NGER Act. Measuring the quantity of PBOs and PBGs allows the emissions released from the consumption of the fuel to be estimated. Subject to 1.03 of the NGER Regulations:

Petroleum-based oils are defined in 1.03 of the NGER Regulations as:

a) oils (including lubricants or fluids but not greases) derived from petroleum and their synthetic equivalents

b) oils (including lubricants, fluids and greases) derived from petroleum and their synthetic equivalents, if recycled for use as oils.

Petroleum-based greases are defined in 1.03 of the NGER Regulations as:

a) petroleum-based greases and their synthetic equivalents

b) oils (including lubricants, fluids and greases) derived from petroleum and their synthetic equivalents, if recycled for use as greases.

3. When are petroleum-based oils and petroleum-based greases consumed?

NGER Regulation 2.26 states that 'consumption of energy', in relation to a facility, means the use or disposal of energy from the operation of the facility including own-use and losses in extraction, production and transmission.

This is a broad definition and is taken to mean that PBOs and PBGs are to be considered 'consumed' when the oil or grease is applied or used in the operation of a facility in a manner consistent with their intended use.

The PBO and PBG is considered consumed as soon as it is removed from the container in which it was supplied. The quantity consumed is not affected by oxidation level or any amounts of PBO and PBG that are recovered from the facility and transferred offsite. For example, the total volume of a PBO lubricant that was added into the transmission of a heavy vehicle is considered to have been consumed on the date it was added and the energy consumption must be reported for the total volume.

4. When does consumption of petroleum-based oils (other than PBOs used as fuel) and petroleum-based greases need to be reported?

Reports submitted under sections 19, 22G and 22X of the NGER Act are required to include any PBO or PBG consumption during the reporting year from the operation of the facility(s) covered by the reports. Reports must include the amount and energy content of the PBOs and PBGs that were:

- **consumed by combustion** (when used as a lubricant), if the amount exceeds 5 kL as described in Part 2.4 of the NGER Measurement Determination. See chapter 5 of this guideline.
- **consumed without combustion**, if the amount exceeds 15 kL as described in Part 2.7 of the NGER Measurement Determination. See chapter 6 of this guideline.

> **PBOs used as a fuel**
> When a PBO is combusted to produce heat or electricity (or for stationary or transport energy purposes) it is being combusted as a fuel. Emissions and energy should be reported when the amount exceeds 1 kL as per section 2.39(b) of the NGER Measurement Determination. Read the Estimating emissions and energy from fuel combustion guideline[11] for more information.

5. Estimating emissions from the use of PBOs (other than PBOs used as fuel) and PBGs

Division 2.4.5A of the NGER Measurement Determination provides 3 methods for estimating emissions of carbon dioxide released from the use of PBOs and PBGs as lubricants in the operation of a facility. There is no estimation methodology for emissions of methane and nitrous oxide from the consumption of PBOs and PBGs as lubricants.

In this context, 'use as a lubricant' includes all circumstances where the primary function of a substance is to reduce friction between contacting surfaces.

Examples of PBOs and PBGs used as lubricants include:

- use in the transmission of a heavy vehicle
- oils used in engines and gearboxes
- greases used in electric motor applications.

Section 2.40A (2) also provides for incidental reporting of emissions of PBOs and PBGs where, a method other than those described in the NGER Measurement Determination may be used that is consistent with the principles in section 1.13 of the NGER Measurement Determination. See the Aggregated facility reporting percentage estimates and incidental emissions and energy[12] guideline.

Method 1

Method 1 provides for generalised emissions estimates from the use of PBOs (other than PBOs used as fuel) and PBGs. Under Method 1, reporters can use emission factors described in Part 3 of Schedule 1 of the NGER Measurement Determination or determine their own facility specific emission factors. Method 1 assumes a default oxidation factor approximately equal to 0.20 for petroleum-based oils and 0.05 for petroleum-based greases. This means that approximately 20% of the PBOs and 5% of the PBGs used in the facility is assumed

[11] https://cer.gov.au/document_page/estimating-emissions-and-energy-fuel-combustion-guideline
[12] https://cer.gov.au/document_page/guidance-aggregated-facility-reporting-percentage-estimates-and-incidental-emissions-and-energy

to be combusted. Reporters should consider if this is the most appropriate oxidation factor in their circumstances.

Method 1 is described in subsection 2.48A (1) of the NGER Measurement Determination:

$$E_{pogco2} = Q_{pog} \times EC_{pogco2} \times \frac{EF_{pogco2oxec}}{1\,000}$$

Where:

$\mathrm{E}_{\mathrm{pogco2}}$ is the amount of carbon dioxide released from the consumption of PBOs or PBGs from the operation of the facility during the year measured in tonnes carbon dioxide equivalence (t CO_2-e).

$\mathrm{Q}_{\mathrm{pog}}$ is the quantity of PBOs or PBGs consumed from the operation of the facility, estimated in accordance with Division 2.4.6 of the NGER Measurement Determination.

$\mathrm{EC}_{\mathrm{pogco2}}$ is the energy content factor of PBOs or PBGs measured in gigajoules per kilolitre (GJ/kL) as mentioned in Part 3 of Schedule 1 of the NGER Measurement Determination.

$\mathrm{EF}_{\mathrm{pogco2oxec}}$ is the emission factor for carbon dioxide released from the operation of the facility during the year (which includes the effect of an oxidation factor) measured in kilograms CO_2-e per gigajoule (kg CO_2-e/GJ) of PBO or PBG consumed as mentioned in Part 3 of Schedule 1 of the NGER Measurement Determination, or as calculated through the equations below.

Facility specific oxidation and emission factor calculations

To account for PBO and PBG that has been recovered at the facility and transferred offsite, a facility specific emission factor can be developed under section 2.48A (2) (b) of the NGER Measurement Determination as follows:

$$EF_{pogco2oxec} = OF_{pog} \times EF_{pogco2ec}$$

Where:

OF_{pog} is the estimated oxidation factor for PBOs or PBGs (to be determined according to equation 2 below).

$EF_{pogco2ec}$ is 69.9.

The facility specific oxidation factor is determined under section 2.48A (3) of the NGER Measurement Determination.

$$OF_{pog} = \frac{Q_{pog} - Oil\ Transferred\ Offsite_{pog}}{Q_{pog}}$$

Where:

$Qpog$ is the quantity of PBOs or PBGs consumed from the operation of the facility, estimated in accordance with Division 2.4.6 of the NGER Measurement Determination.

$Oil\ Transferred\ Offsite_{pog}$ is the quantity of oils, derived from PBOs or PBGs, transferred outside the facility, and estimated in accordance with Division 2.4.6 of the NGER Measurement Determination.

Method 2

Method 2 is the same as Method 1, but a facility specific emission factor $EF_{pogco2ec}$ must be determined in accordance with Division 2.4.3 of the NGER Measurement Determination.

Method 3

Method 3 is the same as Method 1, but the facility specific emission factor $EF_{pogco2ec}$ must be determined in accordance with Division 2.4.4 of the NGER Measurement Determination.

6. Estimating energy from the consumption of PBOs and PBGs without combustion

PBOGs may also be consumed without combustion. PBOGs that are consumed without combustion should be reported under section 2.68 of the NGER Measurement Determination. Some scenarios to which section 2.68 of the NGER Measurement Determination applies include:

- coating of metal products with petroleum-based oils for corrosion protection
- use of petroleum-based oils as hydraulic fluids (including brake fluids)
- use of petroleum-based oils as components of products such as oil-extended polymers or elastomers, paints, solvents or sprays
- use of oils in electrical equipment (for example, transformer oil)
- use of diesel or fuel oil as a surface modifier in coal froth floatation processes
- use of oils as heat transfer fluids or working fluids in industrial applications.

7. Measurement criteria for the quantity of PBOs and PBGs consumed

Reporters must measure quantities consumed or transferred offsite, as noted in the above equations, in accordance with Division 2.4.6 of the NGER Measurement Determination. This Division describes 4 criteria for measurement of liquid fuels. The NGER Measurement Determination categorises PBOs and PBGs as liquid fuels. Accordingly, the measurement methodologies provided in Division 2.4.6, adapted to measurement of PBOs and PBGs are as follows:

- Criterion A: the amount of PBOs or PBGs delivered for the facility during the year as evidenced by invoices issued by the vendor of the PBO or PBGs.
- Criterion AA: the amount of PBOs or PBGs combusted from the operation of the facility during the year based on amounts delivered during the year (evidenced by invoices) as adjusted for the estimated change in the quantity of the stockpile of PBOs or PBGs for the facility during the year.
- Criterion AAA**:** the measurement during the year of the PBOs or PBGs combusted from the operation of the facility. The measurement must be carried out:
  - » at the point of combustion at ambient temperatures and converted to standard temperatures, using measuring equipment calibrated to a measurement requirement, or

- at ambient temperatures and converted to standard temperatures, at the point of sale of the PBOs or PBGs, using measurement equipment calibrated to a measurement requirement.

The above point relating to the 'point of sale of the PBOs or PBGs' is only available if:

- the change in the stockpile of the PBOs or PBGs for the facility for the year is less than 1% of total combustion on average for the facility during the year, and
- the stockpile of the PBOs or PBGs for the facility at the beginning of the year is less than 5% of the total combustion from the operation of the facility for the year.

- Criterion BBB: is the estimation of the combustion of a PBO or PBG for the year using accepted industry measuring devices or, in the absence of such measuring devices, in accordance with industry practice if the equipment used to measure consumption of the fuel is not calibrated to a measurement requirement.

Criterion A, AA, or AAA must be used if the acquisition of the PBOs or PBGs involves a commercial transaction.

> **Criterion AA and AAA**
> If, during a year, criterion AA, or criterion AAA using paragraph 2.52(2) (a) of the NGER Measurement Determination (that is, measuring at the point of consumption or transfer), is used to estimate the quantity of PBOs or PBGs combusted then, in each year following that year, that same criterion must be used

Criterion AAA or BBB must be used if the acquisition of the PBOs or PBGs does not involve a commercial transaction.

In accordance with the general principles of emissions reporting outlined in section 1.13 of the NGER Measurement Determination, reporters must demonstrate that they have followed one of these criteria when estimating the amount of PBOs and PBGs consumed in or transferred from the facility.

8. More information

Email: cer-nger-reporting@cer.gov.au

Phone: 1300 553 542 within Australia

Website: www.cer.gov.au