



Technical Guidance Mitigating Greenhouse Gas Emissions



Environmental Protection Authority
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1.0 Purpose and scope

This technical guidance addresses the EPA's objectives for greenhouse gas emissions from new or expanding operations, consistent with the mitigation hierarchy (avoid, reduce, offset). The purpose of this guidance is to:

- discuss the circumstances under which the EPA will assess greenhouse gas emissions associated with development proposals;
- outline relevant considerations for mitigating greenhouse gas emissions consistent with the objectives of the *Environmental Protection Act 1986* (EP Act); and
- ensure proposals that contribute to Western Australia's greenhouse gas emissions are assessed in a sound and consistent manner that demonstrates how the EPA's objective for the Factor 'greenhouse gas emissions' will be met.

The approaches outlined in this Guidance are not new. They have been applied to significant and relevant proposals subject to formal environmental impact assessment for almost two decades.

This Guidance reflects the best available science and builds on the approach that has been refined and consolidated over this period. It is complementary to existing national policy settings and consistent with goals for reducing greenhouse gas emissions under the United Nations Framework Convention on Climate Change (UNFCCC).

The scope of this guidance relates to the six greenhouse gases covered by the UNFCCC which are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulphur hexafluoride (SF₆) and specified kinds of hydro fluorocarbons and perfluorocarbons.

2.0 Background and rationale

The Australian Government's principal mitigation initiative is currently the Emissions Reduction Fund (ERF) and the associated safeguard mechanism. The safeguard mechanism applies to facilities with direct emissions (scope 1) in excess of 100,000 tonnes CO₂-e per annum, and requires liable entities to keep emissions at or below a predetermined (historical or calculated) emissions baseline¹.

The International Energy Agency² has observed the lack of an effective 'carbon constraint or rate under the ERF or Safeguard' and notes that additional measures are required to meet Australia's 2030 targets. This view was reinforced by the United Nations Environment Programme's Emissions Gap Report 2018 and a recent review by the Organisation for Economic Cooperation and Development (OECD) which shows that Australia is one of the most emissions-intensive of OECD countries and will fall short of its 2030 Paris Agreement targets³.

As of 28 June 2018, 74 non-electricity sector safeguard mechanism facilities (around a third of liable facilities outside the electricity sector) had applied to increase their emissions baseline. From 2019 major emitters will move to 'calculated baselines' set by reference to median emissions intensity values. Independent analyses suggest that emissions from entities covered under the safeguard mechanism will substantially increase by 2030^{4,5}. The lack of a formal linkage - in the form of an aligned objective, or emissions target - between the safeguard mechanism and Australia's Nationally Determined Contribution under the Paris Agreement is also noted.

1 National Greenhouse and Energy reporting Scheme, Clean Energy Regulator, Canberra.

2 Energy Policies of IEA Countries. Australia 2018 Review. International Energy Agency.

3 OECD Environmental Performance Reviews: Australia 2019.

4 Australia's Rising Greenhouse Gas Emissions, Climate Council of Australia, June 2018.

5 Tracking 2 Degrees, Quarterly Report Q1 FY2018, NDEVR Environmental.

6 Choose your own baseline - Industrial emissions and the Safeguard Mechanism, Reputex Energy, February 2018.



In 2016, Western Australia contributed 82.2 million tonnes⁷ carbon dioxide equivalent (CO₂-e), or 16 per cent, to Australia's greenhouse gas emissions. Western Australia is the only Australian jurisdiction to have experienced a substantial increase in greenhouse gas emissions between 2000 and 2016, with the State's emissions increasing by 27 per cent over this period.

Western Australia has the second highest per capita emissions of all Australian states and territories, with emissions per capita well above those of other developed economies, including resource-based economies such as Canada⁸.

Future resource and energy proposals assessed under Part IV of the *Environmental Protection Act 1986* (EP Act), particularly large upstream liquefied natural gas projects, have the capacity to further increase the State's emissions by a large margin to 2030⁹ and materially contribute to Australia's total emissions.

Western Australia's emissions trajectory is concerning in light of Australia's international commitments and increasingly stringent global agreements. This technical guidance acknowledges that, in the absence of effective national mechanisms, a greater share of the burden will fall to regulators in state and territory jurisdictions.

3.0 Context

In accordance with the objectives under the EP Act to '*protect the environment and to prevent, control, and abate pollution and environmental harm*', the goal of requiring emitters to avoid, reduce and offset greenhouse gas emissions is critical to minimise the risk of our contribution to global climate change.

This guidance does not seek to duplicate other regulatory approaches. The framework approach outlined will be applied with regard to evolving national policy settings and new international commitments.

It is noted that many of the considerations outlined in this guidance are aimed at improving transparency and addressing market failures which impede energy efficiency and low emissions technology uptake, and are *warranted regardless of the policy approach at the national level*.

The EPA considers that proposals with the potential to emit substantial amounts of GHG should utilise the mitigation hierarchy (avoid, reduce, offset) to address all direct (scope 1) emissions from the project.

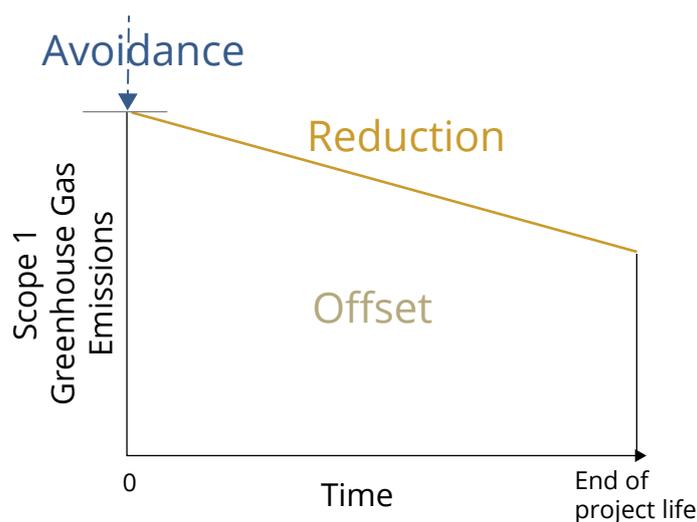
⁷ From the *2016 State and Territory Greenhouse Gas Inventory*.

⁸ Global Carbon Atlas 2016.

⁹ Australian Government, Department of Industry, Innovation and Science – Resources and Energy Quarterly

4.0 Outline of the greenhouse gas management framework

The Western Australian EPA has a long-standing record of encouraging proposals undergoing environmental impact assessment to identify and minimise greenhouse gas emissions. The EPA's objective is to ensure that the mitigation hierarchy is applied such that greenhouse gas emissions from proposals are avoided or reduced, and residual emissions offset, in the planning, design and operational stages (Figure 1).



The EPA's greenhouse gas management framework is aligned with the mitigation hierarchy (avoid, reduce, offset) and includes measures aimed at:

- **Avoiding emissions through best practice design and benchmarking** – comparing emissions and energy intensity performance metrics reasonably consistent with international industry best practice and ensuring emissions and energy intensity, including adoption of renewable/low emission technologies, are reduced at the design stage and/or a particular level of emissions intensity performance is attained;
- **Continuous improvement to reduce emissions over the project life** – ensuring consideration of measures to improve performance or setting targets for emissions intensity improvement over time;
- **Offsetting emissions** (carbon offsets) – requiring the implementation of a greenhouse gas emissions offset package to offset residual emissions.

The EPA also recommends conditions for **reporting emissions** – including emissions intensity performance, and continuous improvement or offsets – to provide assurance to the community about measures being implemented by proponents to mitigate their emissions over the life of the project.

The EPA notes these emissions performance metrics are not reported under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

5.0 Guidance to proponents on application of the framework

The consideration of greenhouse gas emissions from proposals will be subject to a significance framework to ensure projects are assessed, and greenhouse gas emission requirements recommended, in an effective, consistent and equitable manner.

Projects with direct emissions of more than 100,000 tonnes per annum (tpa) CO₂-e will be required to describe emissions associated with the proposal and to outline management measures for emissions consistent with the EPA's mitigation hierarchy. Key elements proponents will be required to describe include:

- direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions (CO₂-e) per annum and over the life of the proposal;
- a breakdown of emissions by source inclusive of stationary energy, fugitives, transport, and emissions associated with changes to land use;
- the projected emissions intensity (emissions per unit of production) for the proposal; and
- proposed measures to avoid, reduce or offset emissions associated with the proposal.

The EPA recognises that some facilities assessed under Part IV of the EP Act have substantial overall emissions as a consequence of their large electricity-related emissions. Focusing exclusively on scope 1 emissions in the environmental impact assessment process would limit opportunities for proponents with substantial scope 2 emissions to properly consider measures to improve management of electricity consumption. Noting that these proponents may have limited opportunity to influence the emissions intensity of electricity generation, the threshold will be set by reference to scope 1 emissions only.

The EPA may consider scope 3 emissions from a proposal, having regard to the nature of the development and noting that a proposal's 'value chain' emissions may be many times more than those from its own operations. In particular, the EPA will consider seeking information on scope 3 emissions where there is a proximate link between the proposal's activity and emissions from downstream consumption (such as combustion of fossil fuels), and where scope 3 emissions will be relatively large compared to scope 1 and 2 emissions.

5.1 Avoiding emissions through best practice design, benchmarking

Benchmarking and design requirements seek to influence technology selection at an early stage of project development, and encourage proponents to avoid and reduce greenhouse gas emissions when evaluating options for plant design including technologies or fuels. Requiring proponents to consider greenhouse gas emissions in the design stage of a proposal is critical to reducing emissions over the life of the project.

Project proponents will be required to demonstrate that all reasonable and practicable design measures, including renewable energy options, have been considered to avoid and reduce emissions at the time of seeking project approval. Proponents should demonstrate consideration of the mitigation hierarchy (avoid, reduce, offset) in minimising residual impacts associated with the proposal.

Benchmarking proposals against other projects nationally or globally can be complex, particularly where there is a paucity of directly comparable emissions performance data. As a result, it can be difficult to determine whether proponents are making all reasonable efforts to deploy best practice technologies within the constraints of a particular project.

In some circumstances, the EPA may require independent technical advice or peer review from appropriately qualified analysts to support evaluation of best practice design and technology.

The EPA will also continue to draw on advice, analysis and data from regulators across Australian jurisdictions to support its assessment of industry best practice to ensure best practice requirements are robust and evidence-based.

5.2 Continuous improvement to reduce emissions over the project life

While the most significant opportunities to avoid and reduce emissions occur in the early design phase, some proposals will continue to identify options to reduce emissions over the life of the project. Continuous improvement measures may focus on energy efficiency improvements or use of waste heat, adoption of low emissions technologies, fuel switching, and leak detection and repair programs. Proposals will be required to demonstrate consideration of suitable targets for continuous improvement, and to periodically assess and report measures to minimise emissions (including through energy efficiency). These requirements address well recognised barriers to energy efficiency in the industrial and power sectors that impede the adoption of otherwise cost-effective ('no regrets') measures.

The EPA expects that proposals with substantial emissions will explicitly address continuous improvement measures in their greenhouse gas abatement plans, and report on opportunities identified and implemented to minimise greenhouse gas emissions.

5.3 Offsets

Greenhouse gas offsets (carbon offsets or carbon credits) are generated from activities that prevent or reduce the release of greenhouse gas emissions to the atmosphere, or remove greenhouse gases from the atmosphere. Removal of greenhouse gases through 'carbon sequestration' involves the capture and storage of carbon in soils, geological reservoirs, forests and other vegetation.

Carbon offsets can compensate for greenhouse gas emissions that occur elsewhere, and thereby address the residual impact of major developments on the global climate. In this way, offset conditions can counterbalance or trade off the significant residual environmental impacts associated with proposals.

Proponents with scope 1 emissions in excess of 100,000 tonnes per annum (tpa) will be required to offset any residual (net) direct emissions associated with the proposal. Application of the mitigation hierarchy to minimise impacts, and the use of offsets for residual impacts, is consistent with the approach of the Western Australian State Government for biodiversity offsets¹⁰.

The EPA considers a threshold of 100,000 tpa strikes a reasonable balance between effectiveness (i.e. coverage) and regulatory burden.

The EPA does not propose to generally apply offsets to residual scope 2 emissions, noting the risk of duplication (i.e. emissions being offset twice) and the limited capacity of proponents in some circumstances to influence the emissions intensity of electricity sources.

Offsets used in respect of residual emissions should meet offset integrity principles set out under the National Carbon Offset Standard. Carbon markets, including methodologies for offsetting and mechanisms for crediting offset activities, have evolved significantly since the EPA first began recommending greenhouse gas offset conditions for major proposals in 2005. Under the Australian Government's *Carbon Credits (Carbon Farming Initiative) Act 2011*, carbon offsets or 'carbon credits' (known as Australian Carbon Credit Units or ACCUs) are generated from activities in a wide range of sectors, including waste, agriculture, vegetation, transport, buildings and mining. ACCUs can then be sold to businesses or individuals wishing to offset their emissions.

¹⁰ WA Environmental Offsets Policy 2011.

The National Carbon Offset Standard defines carbon offset eligibility to ensure genuine and credible emissions reductions. Proponents may purchase offsets from a range of sources that meet the criteria defined under the National Carbon Offsets Standard to satisfy their offset obligations. The EPA may give additional consideration to the nature of proposed carbon offsets to ensure they effectively reduce net emissions.

In order to avoid double counting, proponents subject to offset conditions will be expected to surrender or voluntarily cancel offsets in the relevant offset registry. Ideally, offsets should align with residual emissions in the relevant year.

The EPA notes that offset requirements are prescriptive, and are non-complementary to a broad-based market mechanism such as a carbon price or a 'cap and trade' emissions trading scheme. Until emissions from proposals are effectively covered in this manner, offsets for residual emissions will continue to be considered for proposals meeting thresholds set out in this guideline.

5.4 Reporting

In order to support data availability, public accountability and transparency, the EPA requires proposals with substantial emissions to publicly report metrics related to greenhouse gas emissions which are not currently addressed by the NGER Act. This includes the emissions intensity performance of the facility, and measures implemented by the proponent to minimise or offset greenhouse gas emissions over the project life.

It is acknowledged that reporting conditions have been applied historically in the context of significant restrictions on publication of facility-level data under the NGER Act. These data restrictions are partly addressed by the Australian Government's safeguard mechanism, which has enhanced the visibility of facility-level emissions for liable facilities.

Publication of safeguard data does not, however, facilitate provision of information to the EPA or the Western Australian community about the efforts of proponents to minimise or offset emissions, or the emissions intensity performance (emissions per unit of production) achieved by proposals *in practice*.

Requiring the publication of this information will provide assurance to the community about the progress of undertakings (including offsets) made by proponents during the review phase, support data availability and best practice benchmarking, and ensure that commitments in relation to performance standards are being met.

6.0 Review and transition

This Technical Guidance will be reviewed after 12 months.

This Guidance will apply to all new proposals and changes to proposals, including those currently under assessment.

The EPA recognises the need for proponents to have sufficient time to develop and then implement their avoidance, reduction and offsetting plans, and that an allowance for an effective transition period is warranted.

7.0 Glossary of terms

Australian Carbon Credit Units: An ACCU is a unit issued to a person by the Clean Energy Regulator by making an entry for the unit in an account kept by the person in the electronic [Australian National Registry of Emissions Units](#) (Registry). Each ACCU issued represents one tonne of carbon dioxide equivalent (tCO₂-e) stored or avoided by a project. An ACCU can only be issued to a person if the person has a Registry account and a Registry account can only be opened by a person after the Regulator has considered whether they are a 'fit and proper person'.

Cap and trade emissions trading scheme: A cap and trade system is a market-based approach to controlling pollution that allows corporations or national governments to trade emissions allowances under an overall cap, or limit, on those emissions.

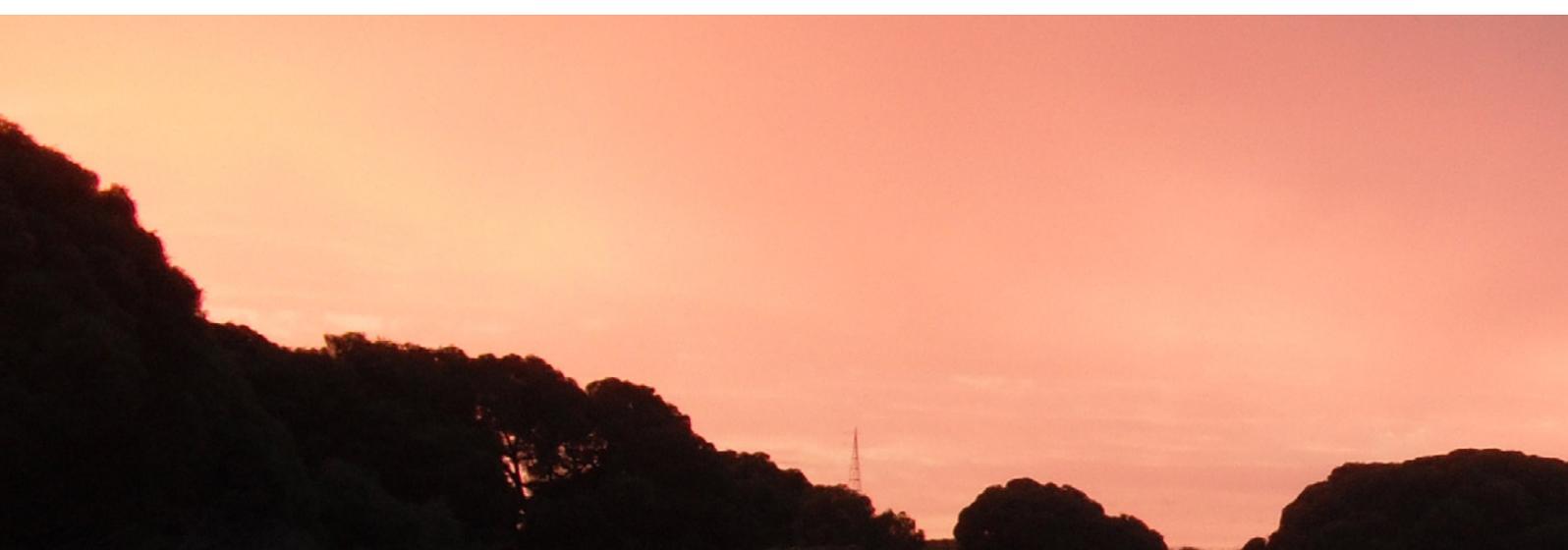
Carbon offsets: A carbon offset is a reduction in emissions, or the removal from the atmosphere, of carbon dioxide or greenhouse gases made in order to compensate for an emission made elsewhere.

Complementary: In the context of GHG emissions, policies which enhance or complement the effectiveness of a carbon price.

Emissions Reduction Fund: The Emissions Reduction Fund is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. It is enacted through the *Carbon Credits (Carbon Farming Initiative) Act 2011*, the [Carbon Credits \(Carbon Farming Initiative\) Regulations 2011](#) and the [Carbon Credits \(Carbon Farming Initiative\) Rule 2015](#).

Greenhouse gases: Gaseous compounds that affect the atmosphere's radiative forcing, trapping heat in the lower atmosphere.

Nationally Determined Contribution: Nationally determined contributions (NDCs) are part of the Paris Agreement and underpin the achievement of its long-term goals. NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. The [Paris Agreement](#) (Article 4, paragraph 2) requires each Party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve.



Non-complementary: In the context of GHG emissions, policies which duplicate or distort the effectiveness of a carbon price.

Paris Agreement: An agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse gas emissions mitigation, adaptation, and finance, starting in the year 2020. As of November 2018, 195 UNFCCC members have signed the agreement, and 184 have become party to it. The Paris Agreement's long-term goal is to keep the increase in global average temperature to well below 2 °C above pre-industrial levels; and to limit the increase to 1.5 °C, since this would substantially reduce the risks and effects of climate change.

Safeguard mechanism: The mechanism implemented under the Commonwealth *National Greenhouse and Energy Reporting Act 2007* to require facilities with direct emissions in excess of 100,000 tonnes per annum to keep their emissions at or below a baseline level.

Scope 1 emissions: The GHG emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility level.

Scope 2 emissions: The GHG emissions released to the atmosphere from the indirect consumption of an energy commodity.

Scope 3 emissions: The GHG emissions other than scope 2 emissions that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business.

United Nations Framework Convention on Climate Change: An international environmental treaty adopted on 9 May 1992, and entered into force on 21 March 1994. The UNFCCC objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The framework sets nonbinding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "Agreements") may be negotiated to specify further action towards the objective of the UNFCCC.

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