Environmental Factor Guideline

Greenhouse Gas Emissions

The environmental objective of the *Greenhouse Gas Emissions* factor is:

To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable

Purpose

The purpose of this guideline is to outline how and when the Greenhouse Gas Emissions factor is considered by the Environmental Protection Authority (EPA) in the environmental impact assessment (EIA) process.

Specifically, the guideline:

- describes why the EPA has published the guideline
- describes how the guidelines are applied
- defines greenhouse gases (GHG) and describes the different scope of emissions
- outlines the international and national framework
- describes how this factor links with other environmental factors
- outlines when the EPA may apply this guideline
- describes EIA considerations for this factor
- provides a summary of the information required by the EPA to undertake EIA related to this factor (including consideration of scope 1, 2 and 3 emissions)
- provides the expected content of greenhouse gas environmental management plans (GHG EMP)
- outlines periodic public reporting requirements
- identifies issues commonly encountered by the EPA during EIA of this factor
- outlines the timeframes for reviewing this guideline.

Why does the EPA need an Environmental Factor Guideline for Greenhouse Gas Emissions?

Under section 15 of the *Environmental Protection Act 1986* (EP Act), the EPA has the objective to use its best endeavours to protect the environment and to prevent, control and abate pollution and environmental harm. One way in which the EPA discharges this objective is to consider proposals referred to it under Part IV of the EP Act. The reports that the EPA produces following formal assessments must set out what the EPA considers to be the key environmental factors identified in the course of the assessment, the EPA's recommendation as to whether the proposal may be implemented, and (if the EPA recommends that implementation be allowed) the conditions and procedures that should apply to that implementation. The Minister for Environment (in consultation with other decision-making authorities) then decides whether or not the proposal may be implemented.

The section 15 objective, combined with the established link between cumulative sources of GHG emissions and the risk of climate change, and the broad acknowledgement that the warming climate will impact the Western Australian (WA) environment, means it is appropriate for the EPA to consider the effects of proposals that contribute to the state's GHG emissions.

The EPA considers that global warming should be limited to no more than 1.5 degrees Celsius (1.5°C) above pre-industrial levels to minimise the risk of environmental harm to WA's environment. In order to contribute to this goal, the EPA's view is that there should be a deep, substantial and sustained reductions in WA's emissions this decade, and achievement of net zero emissions no later than 2050 through a straight-line trajectory (at a minimum) from 2030. The EPA emphasises reductions beyond these should also be made as far as practicable, and that WA emissions should reach net zero well before 2050.

How are EPA guidelines applied?

This guideline provides guidance on when and how GHG emissions will be considered by the EPA under Part IV of the EP Act.

The intent of EPA guidelines is to inform the development, consideration and assessment of a proposal, not determine the outcome of the EPA's consideration under Part IV of the EP Act. In the end, each proposal will be considered on its individual merits.

Given climate science and policy are rapidly evolving, the EPA will also have regard to relevant Commonwealth and State government legal and policy instruments where they reflect contemporary science and are consistent with the EPA's objective.

The EPA notes that at the time of publication of this guideline Commonwealth emissions reduction legal and policy instruments are not intended to exclude or limit the operation of State law that is capable of operating concurrently.

The EPA will consider practicable mechanisms to reduce the overlap and avoid duplication with existing frameworks for proposals considered under Part IV of the EP Act. This includes any reforms of relevant Commonwealth and/or State legal or policy instruments that take effect.

What are greenhouse gases and the different scopes?

This guideline relates to the seven categoies of GHG covered by the United Nations Framework Convention on Climate Change (UNFCCC) Reporting Guidelines on Annual Inventories. These gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexafluoride (SF_6), hydro fluorocarbons (HFCs), perfluorocarbons (PFCs) and nitrogen trifluoride (NF_3).

Scope 1 GHG emissions are those released to the atmosphere as a direct result of an activity, or a series of activities, which are part of a proposal being considered by the EPA.

Scope 2 GHG emissions are those from the independent consumption of an energy product by the proposal. The EPA acknowledges that scope 2 emissions from a proposal are also the scope 1 emissions from an independent energy proposal. However, scope 2 emissions are relevant to the consideration of a proposal because the proponent has control over its choice of independent energy quantity and source.

Scope 3 emissions are indirect GHG emissions other than scope 2 emissions that are generated in the wider community. Scope 3 emissions (both upstream and downstream) occur as a consequence of the activities of a proposal, but from sources not owned or controlled by the proponent as part of the proposal.

Scope 1, 2 and 3 emissions are also categorised under Commonwealth legal and policy instruments for facility reporting purposes. In most cases, the EPA expects there will be alignment of emissions categories for Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER) 'facilities' and EP Act 'proposals'. If there is a difference, the EPA expects NGER facilities reporting information to be utilised to provide information fit for purpose for EP Act assessments.

Greenhouse gas emissions, climate science and framework agreements

The UNFCCC provides the framework for international cooperation to reduce global GHG emissions and limit climate change. The UNFCCC Paris Agreement, which came into force on 4 November 2016, aims to limit warming to well below 2°C, preferably 1.5°C, compared to pre-industrial levels.

The 2018 Intergovernmental Panel on Climate Change (IPCC) special report on the impacts of warming shows the catastrophic consequences of allowing the world to heat by more than the 1.5 degrees, with grave consequences for the natural world and human populations. This report indicated that global emissions would need to fall by about 45 per cent from 2010 levels by 2030, and net zero achieved by 2050, to limit global warming to 1.5°C[1].

More recently, the IPCC's Sixth Assessment Report (AR6) emphasises that while 1.5°C and 2°C will be exceeded during the 21st century without deep reductions in emissions in the coming decades, immediate action would substantially reduce projected damages for human systems and ecosystems. The goal of limiting warming to 1.5°C requires global emissions to peak no later than 2025 followed by rapid, deep and sustained, and in most cases immediate, reduction in all sectors[2].

The 2021 Glasgow Climate Pact requires nations to revisit and strengthen their current 2030 targets in 2022, acknowledging that current pledges are insufficient.

National and Western Australian context

Australia currently contributes around 1.3 per cent of global GHG emissions[3]. Australia's emissions for the year to September 2021 were approximately 501 million tonnes of carbon dioxide equivalent (CO_2-e), which is 19.6 per cent below emissions in 2005[4].

In 2020, WA contributed 81.7 million tonnes CO_2-e to national emissions (down from 91.85 million tonnes of CO_2-e in 2019)[5]. This represents 16 per cent of Australia's emissions. The State and Territory Greenhouse Gas Inventories, however, still show an increase in WA's emissions from the early 1990s. The state's emissions in 2020 were 4 per cent above 2005 levels due to strong growth in mining and exports of fossil fuels.

Headline statements from the IPCC's AR6 report underscore the significant increase in projected regional climate impacts from those of the Fifth Assessment Report in 2014. Climate change has already driven or exacerbated many extreme events with devastating impacts for communities and ecosystems, including the catastrophic 'Black Summer' fires of 2019–20, repeated bleaching of the Great Barrier Reef, loss of kelp forests, and more intense heatwaves and droughts. Temperatures and sea levels Australia-wide are projected to rise faster than the global average.

[1] The Intergovernmental Panel on Climate Change (IPCC), 2018 Special Report, Global Warming of 1.5°C. Retrieved from www.ipcc.ch/sr15/

[2] The Intergovernmental Panel on Climate Change (IPCC), 2022 and 2023 Sixth Assessment Reports (AR6). Retrieved from www.ipcc.ch/assessment-report/ar6/

[3] World Resources Institute (2017, April 11). CAIT Climate Data Explorer. Retrieved from cait.wri.org

[4] Quarterly update of Australia's National Greenhouse Gas Inventory for September 2021. Retrieved from www.industry.gov.au

[5] State and Territory Greenhouse Gas Inventories 2020. Retrieved from www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2020/state-and-territory-greenhouse-gas-inventories-2020-emissions

In WA, the south-west is drying at one of the fastest rates in the world. Climate change will increase the number of concurrent and successive extreme events in the state, including drought, heat, flood and fire, with cascading impacts upon food and water resources, health, and supply chains. Some WA ecosystems, including coral reefs, kelp forests, Karri and Jarrah forests, are already at critical thresholds and further warming will result in damage and loss that is irreversible.

In recognition of the impact of climate change on the WA environment, community and economy, the State Government released the *Western Australian Climate Policy* in November 2020, setting out a plan for a climate-resilient community and a prosperous low-carbon future. The *Western Australian Climate Policy* outlines actions for adapting to climate change and transitioning to net zero GHG emissions by 2050, including through development of sectoral emission reductions.

How this factor links with other environmental factors

The EPA recognises that there are inherent links between the *Greenhouse Gas Emissions* factor and other environmental factors through effects on climate. This is evidenced in part by the significant drying of the state's south-west. This drying in turn places significant additional pressures on water resources, flora and fauna, marine environmental quality, and social surroundings.

This guideline addresses one of the major causes of a changing climate; however, the potential impacts of changes in WA's climate will also be considered under each relevant factor.

When this guideline may be considered

Generally, the geographic scope of the EPA's obligations is the State of WA and its environment.

The EPA will have regard to this guideline when considering proposals under Part IV of the EP Act. This includes new proposals, changes to existing proposals (including expansions) and changes to existing implementation conditions.

Generally, GHG emissions from a proposal will be considered where they are reasonably likely to exceed:

- 100,000 tonnes CO_2-e of scope 1 emissions in any year; or
- 100,000 tonnes CO_2-e of scope 2 emissions in any year.

Proposals should not be split into separate referrals to avoid consideration of GHG emissions. Generally, the EPA will assess changes to existing proposals and implementation conditions in the context of the ongoing (but not past) GHG emissions from the existing proposal. The EPA will have regard to whether the combined effect of the existing proposal and the expansion or change are reasonably likely to exceed the above amounts.

The EPA encourages other decision-makers under the EP Act (including s. 45C and s. 46) and other legislation, to also have regard for the guideline.

The EPA also encourages the objectives and content of this guideline be considered as soon as practicable for all proposals with ongoing GHG emissions in excess of the above amounts.

The consideration of GHG emissions from proposals will usually be subject to the approach as outlined in this guideline to ensure projects are considered in an effective, consistent and equitable manner. Notwithstanding this, the EPA will continue to consider proposals on a case-by-case basis and recognises that a flexible approach is important in driving innovation and improvement in best practice technologies.

The EPA may take other laws and statutory decision-making processes into account that can mitigate the potential impacts of a proposal on the environment when deciding whether to assess a proposal, whether to recommend it be implemented, and what conditions are recommended. In particular, the EPA will consider statutory decision-making processes that can regulate GHG emissions to meet the EPA's objectives.

Activities that may be considered under this factor

Development activities that may be considered under this factor include, but are not limited to:

- the extraction, processing and refining of oil and gas
- the burning of fossil fuels for energy production
- mining and processing of metallic and non-metallic minerals
- waste to energy plants
- infrastructure development
- chemical manufacturing and processing
- development that clears vegetation.

Considerations for EIA

Considerations for EIA for *Greenhouse Gas Emissions* factor include, but are not necessarily limited to:

- application of the mitigation hierarchy to avoid, reduce and offset emissions
- the interim and long-term emissions reduction targets the proponent proposes to achieve
- the adoption of best practice design, technology and management appropriate to avoid, reduce or offset scope 1 GHG emissions
- whether reasonably practicable alternatives and measures to avoid, reduce or offset emissions have been considered for scope 2 emissions
- whether reasonably practicable measures have been considered to reduce scope 3 emissions, such as entering into arrangements with third parties to reduce emissions
- relevant sector pathways, benchmarks and/or milestones
- whether the proponent has corporate emission reduction targets and the proposal is consistent with achieving those targets
- whether there are other legal and policy instruments that can require reductions in GHG emissions from a proposal to meet the EPA's objectives.

Information required for EIA

The EPA may require the proponent to provide information including, but not limited to, the following categories.

Estimated emissions

It is in the public interest that GHG emissions arising from significant developments in WA, and measures to mitigate those emissions, are documented and disclosed. The practice of seeking information on scope 1, 2 and 3 emissions from a proposal is not new. The EPA will usually ask proponents to provide estimates of scope 1, 2 and 3 emissions, and how they are likely to change over the life of the proposal, to inform the assessment process.

The EPA expects the following information:

- credible estimates of maximum and expected life of proposal scope 1, scope 2 and scope 3 GHG emissions (annual and total). This should include estimates based on throughput at maximum nameplate/nominal capacity, annual average operational design capacity (including applicable rates and assumptions), actual expected operational throughput (if significantly different from the nameplate or design capacity), and history of actual emissions (for proposals already in the operations phase)
- scope 1 emissions estimates must include all emissions caused as a direct result of the proposal, including emissions associated with the clearing of vegetation (and loss of sequestration potential where relevant)
- a breakdown of GHG emissions by source over the life of a proposal inclusive of, but not limited to, stationary energy, fugitives, transport, and emissions associated with changes to land use
- projected emissions intensity (emissions per unit of production) for the proposal and international benchmarking against other comparable projects, best practice, industry standards and/or milestones and sector pathways, benchmarks and/or milestones.

Greenhouse Gas Environmental Management Plan

When the EPA considers this guideline in assessing a proposal, the EPA will require proponents to develop a GHG EMP as part of the assessment process that meets the EPA's objective.

The EPA's usual minimum expectation for proposals is for deep, substantial and sustained emissions reductions this decade and achievement of net zero emissions no later than 2050 along a linear trajectory (at a minimum) from 2030. This is consistent with the Paris Agreement and the conclusions of IPCC AR6. The EPA emphasises that proponents should seek to exceed these expectations and reach net zero well before 2050. The EPA emphasises that if proponents cannot practicably achieve these minimum expectations, they should clearly justify why.

A template has been developed to support transparency and consistency of GHG EMPs. It is intended that this template is a 'living document' that will be periodically updated in response to further feedback and changing expectations.

A GHG EMP should outline:

- a summary of emission estimates
- a clear pathway for reducing scope 1 and/or scope 2 emissions over the life of the proposal. This should usually be consistent with, or exceed, the EPA's minimum expectations for emissions reductions
- transparent emission estimates and clear targets for commitments for short term reductions, and targets for medium to long term reductions (noting a minimum expectation of 5-year targets)
- strategies that demonstrate how best practice measures have been adopted to avoid or reduce a proposal's scope 1 emissions at commencement, and throughout the life of the proposal through regular reviews
- strategies that demonstrate reasonably practicable measures and alternatives have been considered to avoid or reduce scope 2 emissions at commencement, and throughout the life of the proposal through regular reviews
- that consideration has been given to reducing scope 3 emissions, where reasonably practicable, throughout the life of the proposal through regular reviews
- justification for the emissions baseline used and the alternative approaches that were considered to calculating baselines (including an explanation why these were not adopted)

- a demonstrated commitment to continuous improvement to ensure emissions reductions over the life of the project. This should include a consideration of measures to improve performance or setting targets for emissions intensity improvement over time
- implementation of a GHG emissions offset package to offset residual emissions for scope 1 and 2 emission sources that cannot be avoided or reduced to achieve proposed commitments and targets. In some cases, it may also be reasonably practicable to offset all residual scope 1 and 2 emissions
- whether there are other legal and policy instruments that can regulate GHG emissions from the proposal to meet the EPA's objectives
- demonstrate how the scope 1, 2 and 3 emissions from project operation beyond 2050 is consistent with a global low-carbon transition to net zero by 2050 scenario.

The GHG EMP should usually be accompanied by:

- an expert review that has been undertaken to demonstrate how best practice measures have been adopted. The EPA usually requires independent expert review of best practice measures
- an expert review undertaken of whether offsets that satisfy integrity principles are likely to be reasonably practicable and available at the time of proposed future surrender
- any reviews that demonstrate that the proposal is consistent with, or outperforming, relevant sector pathways and, benchmarks and/or milestones
- a summary of whether scope 2 emissions are subject to emissions reduction regulation
- a summary of where scope 3 emissions will be emitted (domestic or international) and whether they are or are reasonably likely to be subject to similar emissions reduction regulation as scope 1 or 2 emissions.

The EPA recognises the importance of innovation as critical to the success of achieving its objective and acknowledges the need for flexibility to allow for changes in the GHG EMP over time as more effective mitigation alternatives become available.

Where contemplated abatement actions constitute commercial-in-confidence information, the proponent may request that specific details are treated as confidential and are not made publicly available, with justification to support this request.

Periodic public reporting against the Greenhouse Gas Environmental Management Plan

The EPA supports the requirement for proponents to publish their GHG EMP and to periodically publicly report against the requirements of those plans and any implementation conditions. Ideally, this reporting should be aligned with the 5-year milestones set out in Article 4 of the Paris Agreement (for example 2025, 2030).

The EPA also supports the publication of a summary of approved GHG EMPs at commencement of proposals and a summary of 5-yearly progress of achievement of GHG conditions and implementation of GHG EMPs. A GHG EMP summary plan template has been developed and should usually be used for transparency and consistency.

Issues commonly encountered by the EPA during EIA of this factor

The following issues are matters that are commonly encountered by the EPA due to the nature of proposals that are referred to it. Background on these issues is provided here to help proponents and the community engage with EIA. This issues section will be updated from time to time to reflect new issues as they arise in referrals and EIA.

Mitigating emissions for new proposals and significant amendments

Consistent with the objective of the EPA under the EP Act to use its best endeavours to protect the environment and to prevent, control and abate pollution and environmental harm, the EPA expects the application of best practice measures to avoid and reduce scope 1 GHG emissions. This might include facility design, technology choice, operation and closure.

Best practice

Best practice is the most effective, best combination of technologies used and the way in which an installation is designed, built, maintained, operated and decommissioned to avoid and minimise the environmental impacts arising from emissions[6].

The EPA's expectations include:

- avoiding or minimising emissions through best practice design
- avoiding or minimising emissions through demonstration of best practice operations
- adoption of renewable and low emissions
- identification of best practice for the sector that is appropriate to the scale of the relevant proposals at the time best practice is being considered
- evidence that the proposed best practices are capable of achieving stated emissions reductions
- identification of local conditions and current circumstances of the relevant proposal that might influence the choice of technologies or procedures to mitigate GHG emissions
- comparison of GHG emissions and energy intensity performance metrics with comparable facilities both domestically and internationally.

Expectation regarding GHG (carbon) offsets

In accordance with the mitigation hierarchy, the offsetting of emissions (carbon offsets) should be considered as a last resort. Carbon offsets should, as far as practicable, be limited to residual emissions that cannot be avoided or to account for emissions that exceed emission reduction commitments and targets.

Where carbon offsets are to be implemented, they should meet offset integrity principles and be based on clear, enforceable and accountable methods. Domestic offsets under the Safeguard Mechanism, as well as voluntary offsets purchased to reduce residual emissions, may contribute to a proponent's overall commitments set out in a GHG EMP.

Where offsets are proposed to be surrendered at the end of a relevant reporting period, as part of a proposal's GHG EMP, the proponent should provide information about whether offsets are likely to be available and satisfy relevant offset integrity principles.

In considering offset integrity principles, the EPA will have due regard to the integrity standards set out in the Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011*.

Offsets that reduce proposal emissions below 100,000 tonnes CO_2-e of scope 1 or scope 2 per year at referral stage will usually only be taken into account if they are legally enforceable.

Consideration should be given to whether carbon offsets conserve, preserve, protect, enhance and manage the WA environment.

Guideline review

This guideline is intended to be reviewed in 5 years. The EPA acknowledges that climate science and policy are developing, and a review may be undertaken sooner to ensure, as far as practicable, the policy remains contemporary.

[6] EU Industrial Emissions Directive (Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)). Retrieved from ec.europa.eu/environment/industry/stationary/ied/legislation.htm

Version	Change	Date
1.0	Initial document	7 March 2019
2.0	Draft guideline – updated following public consultation	9 December 2019
3.0	Final guideline – updated following consultation with the EPA Stakeholder Reference Group	16 April 2020
4.0	Draft revised guideline for public consultation	27 July – 21 September 2022
5.0	Final revised guideline for publication	5 April 2023

As EPA documents are updated from time to time, users should consult the EPA website (www.epa.wa.gov.au) to ensure they have the most recent version.

Environmental Protection Authority 2023, *Environmental Factor Guideline: Greenhouse Gas Emissions*. EPA, Western Australia.

This document is available in alternative formats upon request.
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