

Guide to assessing greenhouse gas emissions

Information requirements for submissions to
Infrastructure Australia

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Infrastructure Australia is an independent statutory body that is the key source of research and advice for governments, industry and the community on nationally significant infrastructure needs. It leads reform on key issues including means of financing, delivering and operating infrastructure and how to better plan and utilise infrastructure networks.

Infrastructure Australia has responsibility to strategically audit Australia's nationally significant infrastructure, and develop 15-year rolling infrastructure plans that specify national and state level priorities.

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Introduction

The *Infrastructure Australia Act 2008* requires Infrastructure Australia to consider the impact of infrastructure proposals on:

- Australia's net greenhouse gas emissions (GHG), as reported in the national inventory reports in accordance with the UN Convention on Climate Change (1992) and Paris Agreement (2015),
- the achievement of Australia's GHG emissions reduction targets, and
- any policy issues arising from climate change that Infrastructure Australia considers relevant to the proposal.

As a result, all infrastructure proposals submitted to Infrastructure Australia must consider their impact on GHG emissions. This document describes what information needs to be provided, sets requirements for measuring and valuing emissions in economic analysis and outlines other key considerations. The GHG emissions impacts of proposals will be reported in the evaluations that are published on Infrastructure Australia's website.

This document is part of the suite of documents that form the Infrastructure Australia Assessment Framework (the Assessment Framework). The Assessment Framework and this document are regularly reviewed and updated to incorporate better practice approaches, improve alignment with national, state and territory requirements and clarify our requirements for assessment.

Infrastructure Australia's approach will continue to be consistent with Australian Government legislation and policy, including the provisions for measuring and reporting emissions by the Clean Energy Regulator, the Safeguard Mechanism and the *National Greenhouse and Energy Reporting Act 2007 (NGER Act)*.

Defining greenhouse gas (GHG) emissions

For reporting purposes, GHG emissions from the different gases are put on a common basis in terms of tonnes of carbon dioxide equivalent, expressed as CO₂-e. The latest [National Greenhouse Accounts Factors](#) published by the Department of Climate Change, Energy, the Environment and Water should be used to calculate CO₂-e units for the various greenhouse gases. For example, one tonne of methane (CH₄) is expressed as 28 tonnes of carbon dioxide equivalence, or 28 t CO₂-e (in 2023).

Scope of this guidance

Proposals submitted to us are evaluated against three criteria: **Strategic Fit, Societal Impact and Deliverability** (see [Overview - Assessment Framework](#), pp 49-51). We assess the merit of each proposal against all three of these criteria.

Quantifying and monetising GHG emissions will enhance and broaden the assessment of the net social impact of infrastructure proposals. The impacts of a proposal's emissions will constitute an additional consideration as part of our holistic evaluation approach. Our assessment criteria are not weighted, with each proposal being assessed on its merits.

This document should be read in conjunction with the sustainability and resilience considerations that are cross-cutting themes throughout the Assessment Framework. For example, see:

- [Stage 1 - Defining problems and opportunities](#), Boxes 6 and 7 and pp 54-57
- [Stage 2 - Identifying and analysing options](#), Box 6 and pp 45-49
- [Stage 3 – Developing a business case](#), Boxes 14, 15, 20 and 21, and Tables 3, 8 and 9 on pp 42, 57-63
- [Guide to economic appraisal](#), pp 108-109
- [Guide to risk and uncertainty analysis](#), Ch. 5 Climate risks and uncertainties.

Responses to the information outlined in Table 1 are to be included with Stage 1, 2 and 3 submissions to Infrastructure Australia¹.

Infrastructure Australia provides detailed checklists of all information required before we can formally accept submissions for evaluation. Proposals that do not contain the required information cannot be accepted.

Infrastructure Australia recognises that there can be challenges in measuring emissions and practitioner skills are developing in this area. Several measurement tools are publicly available and may assist in measuring emissions. We encourage proponents to engage with Infrastructure Australia in developing their GHG emissions materials.

¹ Please refer to our [website](#) for further information on Stage 1, 2 and 3 submissions.

Table 1: Submission information to consider GHG emissions in infrastructure proposals

Assessment Criteria	Additional information	Stage at which guidance applies	Required or recommended
Strategic Fit	Describe how the proposal aligns with national net zero emissions targets or interim targets.	1, 2 and 3	Required
	Determine if the proposal will establish a facility ² that may be required to report emissions under your entity's NGER Act obligations and/or state and territory requirements.	1, 2 and 3	Required
	Clearly outline how emissions were considered as part of scoping and analysing the proposal options.	2 and 3	Required
	Outline how options analysis has considered criteria related to climate change (such as alignment to emissions targets, resilience outcomes etc.).	2 and 3	Required
Societal impact	Provide a table outlining all emissions impacts related to the proposal, both positive and negative. Identify the net impact on Australia's emissions, positive or negative.	1, 2 and 3	Required
	Quantify and report on emissions from materials, the construction process and of the asset's operation including: <ul style="list-style-type: none"> embodied emissions of purchased materials (e.g. quarry products, concrete, asphalt, steel)³ emissions from the transportation of purchased materials emissions from net vegetation loss/gain emissions from combustion of fuel in third party vehicles using the infrastructure asset (as a result of emissions savings in total demand and emissions from induced/increased demand). <p>Explain how emissions have been estimated, with evidence provided.</p> <p>For further detail please refer to Treatment of vehicle emissions below.</p>	2 and 3	Required

² Facility has the meaning given to it by the National Greenhouse and Energy Reporting Act 2007 (NGER Act), see [Federal Register of Legislation - National Greenhouse and Energy Reporting Act 2007](#) and [National Greenhouse and Energy Reporting NGER \(cleanenergyregulator.gov.au\)](#)

³ Existing tools for estimating emissions include the Clean Energy Regulator's calculators and the NSW Carbon Estimate and Reporting Tool (CERT).

Assessment Criteria	Additional information	Stage at which guidance applies	Required or recommended
Societal impact	Quantified emissions must be monetised in the cost benefit analysis (CBA) - refer to Table 2 for emissions values. The level of detail of quantification and monetisation of emissions impacts should be appropriate to the proposal stage.	2 and 3	Required
	Provide a Carbon Management or Sustainability Reporting Plan that demonstrates the proposed method that would be used to measure and report emissions in construction and operations.	3 only	Required
	Outline how the proposal concept or scheme design has considered opportunities to reduce the proposal's emissions profile (e.g., using recycled materials or including active transport). If these impacts are included as benefits, they must be costed in the CBA, or they will not be considered in our evaluation of the proposal.	3 only	Recommended
Deliverability	Outline how the proposal has considered climate change scenarios and how climate scenarios could impact deliverability. Please refer to the Guide to risk and uncertainty analysis , Ch. 5 Climate risks and uncertainties.	1, 2 and 3	Recommended for Stages 1 and 2 Required for Stage 3 only
	Identify climate related risks (physical and transition risks) in the risk register and risk management plan.	3 only	Required
	Identify approaches adopted to reduce or mitigate emissions in construction and operations (e.g. recycled materials, securing renewable power purchase agreements etc.). If these impacts are included as benefits, they must be costed in the CBA, or they will not be considered in our evaluation of the proposal.	3 only	Recommended

Valuing greenhouse gas emissions in CBA

CBA is an appraisal technique that estimates the economic, social, and environmental costs and benefits of a project in monetary terms. From the perspective of CBA, GHG emissions are an unpriced social impact, known as an externality. As CBA is intended to measure all social costs and benefits related to a project, the impact of GHG emissions, whether a cost or a benefit, must be included in CBA using a monetary value.

Table 2 presents a time series of emissions values per tonne of carbon dioxide equivalent emissions from FY2024 - FY2050. The 'central' value should be used in the core scenario of the CBA. Sensitivity analysis should be performed using the upper ('High') and lower ('Low') values.

Further guidance on applying the recommended emissions values can be found in the accompanying [Guidance Note - Valuing emissions for economic analysis](#), and further information on the approach to developing the recommended values can be found in the [Modelling Report - Estimating a national emissions value for use in economic appraisal](#).

Where jurisdictional emissions targets exceed Australian Government targets, we recommend sensitivity testing on higher emissions values where they are agreed and published by the state or territory government.

Table 2 – National carbon values per tCO₂-e emissions (AUD \$2023)

Year	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032
Low	44	56	62	69	76	87	107	124	144
Central	56	66	76	88	104	123	148	171	192
High	66	77	95	107	132	152	180	210	227

Year	FY2033	FY2034	FY2035	FY2036	FY2037	FY2038	FY2039	FY2040	FY2041
Low	159	166	172	184	191	193	206	210	212
Central	209	222	234	244	254	264	273	282	291
High	258	262	280	293	308	319	329	340	351

Year	FY2042	FY2043	FY2044	FY2045	FY2046	FY2047	FY2048	FY2049	FY2050
Low	215	228	246	267	272	274	276	284	287
Central	300	309	318	326	335	344	354	363	377
High	361	370	375	380	403	421	429	437	469

Treatment of vehicle emissions

Reducing the use of petrol and diesel fuelled vehicles reduces carbon emissions, and decreases air, water, and noise pollution, which benefits the community. CBA often attributes positive externality benefits where a proposal provides travel time savings or reduces Vehicle Kilometres Travelled (VKT), for example as a result of a road upgrade.

Submissions for transport infrastructure proposals typically estimate total demand, which estimates travel time savings for existing traffic that can be attributed to the proposal. In some cases, this benefit can be partly offset by induced (or increased) demand where the proposal's transport modelling has estimated this to be significant. However, negative externalities that can be attributed to induced demand as a result of the proposal are often not separately and clearly reported in CBA.⁴

Infrastructure Australia will only include positive externality benefits associated with reduced VKT in evaluation of a proposal's CBA results, where the negative externalities related to induced demand have also been estimated, monetised and reported.

Providing information

Proponents making Stage 1-3 submissions should outline how the information requested in **Table 1** have been considered in the submission material. Proponents can decide how best to do this, for instance as a defined chapter within the submission material, as an appendix, or provided throughout the documentation.

Next steps

Infrastructure Australia will continue to engage with key stakeholders as we develop guidance to consider:

- policy issues related to climate change that impact infrastructure proposals,
- business case approach to climate-related risks, and delivery outcomes for infrastructure
- emerging methods to simplify measuring emissions.

⁴ There may be a need to consider emissions savings from electric vehicles in future demand scenarios.

Infrastructure Australia is the
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