Recommended emissions values

Table 1 presents a time series of recommended emissions values per tonne of carbon dioxide equivalent emissions from FY2024 - FY2050. The 'central' value is recommended for use in the core scenario of the CBA. The upper ('High') and lower ('Low') values are recommended for use in sensitivity analysis.

The estimated emissions values in 2050 represents the expected cost of technologies which are forecast be used to abate emissions from the most difficult sectors and activities of the economy to achieve net zero.

Beyond 2050, net zero emissions will, at a minimum, need to be maintained in the Australian economy. Improvements in technology may reduce the cost of holding emissions to net zero, however other factors such as population growth will increase the cost of abatement. Due to uncertainties surrounding these factors, it is recommended that the 2050 value of emissions is held constant in economic appraisals that extend beyond 2050.

Table 1 – Recommended carbon values per tCO_2-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

Application of values

The recommended central values should be seen as the minimum value for use in submissions to Infrastructure Australia for evaluation of infrastructure proposals.[8]

A consistent approach to measuring direct, indirect, and embodied emissions, and more detailed guidance of the scope of relevant emissions to be included in CBA are additional important elements in the effective consideration of emissions. Proposals being submitted to Infrastructure Australia should refer to the Guide to assessing greenhouse gas emissions for information of measurement approaches.[9]

Methodology

The recommended emissions values have been estimated using a target consistent approach, meaning they are based on the estimated future costs of abatement necessary for the Australian economy to meet national emissions reduction targets and international commitments.[1]

As Australia's exact pathway to achieving net zero emissions by 2050 is not certain, the recommended values were estimated using potential emissions pathways that are taken to align with the global temperature objectives identified in the Act.

The recommended values were estimated using a variety of Australian studies and computable general equilibrium (CGE) models. CGE models simulate interactions between different sectors of the economy, and account for the flow-on effects of emissions abatement through the economy. These models estimate the marginal cost of abatement for the whole Australian economy, identifying the 'least-cost' approach to meeting Australia's emissions reduction targets.

A range of scenarios were modelled to account for uncertainty regarding technology assumptions and pathways to net zero. The result is a range of emissions values, including a 'lower', 'central' and 'upper' value for each year to 2050. The central value is derived from the expected value (i.e., average) of all modelled scenarios. The upper and lower values align with a 50% confidence interval around the central estimates.

Estimating the value of emissions involves significant uncertainty around long-term abatement costs and Australia's expected pathway to net zero emissions by 2050. To address this uncertainty, it is recommended that practitioners undertake sensitivity testing to assess the possible impact of changes in the value of emissions on the economic analysis of projects.

This approach has previously been used in Australia[2] and by the IPCC[3], and is recommended by the UK[4], France[5], EU[6] and New Zealand[7].

The methodology was reviewed by a panel of technical experts from Australian Treasury, CSIRO, ANU's Centre for Climate and Energy Policy, Climateworks (Monash University), the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, as well as state and territory governments.

For detailed information on the methodology, assumptions and data sources please see Modelling Report - Estimating a national emissions value for use in economic appraisal.