



Department
of Energy &
Climate Change

Updated short-term traded carbon values used for modelling purposes

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Updated short-term traded carbon values used for modelling purposes

2015 short-term carbon values

The following estimates for EU Allowance (EUA) prices have been used in the latest update to [DECC's Energy and Emissions projections](#)¹ and will be used in other models of electricity generation and investment across Government. These are shown graphically in Figure 1.

Table 1: DECC's updated traded carbon values for modelling purposes, £/tCO₂e in real 2015 terms

Year	Low	Central	High
2015	-	5.94	20.79
2016	-	5.91	23.40
2017	-	5.89	26.41
2018	-	6.12	29.86
2019	-	6.35	34.04
2020	-	6.59	39.03
2021	-	6.84	45.16
2022	-	9.38	51.99
2023	-	12.68	58.98
2024	3.06	17.14	67.35
2025	7.63	22.56	73.72
2026	11.54	29.02	80.48
2027	17.12	31.15	87.64
2028	23.81	34.47	93.82
2029	32.83	40.58	101.81
2030	38.29	47.10	108.74
2031	38.29	47.10	108.74
2032	38.29	47.10	108.74
2033	38.29	47.10	108.74

¹ Report available online at: <https://www.gov.uk/government/publications/fossil-fuel-price-projections-2015>

2034	38.29	47.10	108.74
2035	38.29	47.10	108.74

Methodology

These values are identical to those used for [appraisal purposes up to 2020](#).²

Beyond 2020, short-term traded carbon values for modelling purposes are derived in line with the 40% EU GHG emissions target, Market Stability Reserve (MSR) and current market conditions:

- Fundamentals-based prices under the central scenario are zero until the early 2020s as the result of market oversupply of carbon allowances. To capture the shift from prices driven by characteristics of market trading to prices driven by abatement costs the central trajectory is produced using a hybrid methodological approach. This involves averaging futures prices and extrapolating to produce carbon values until the point where fundamentals-based prices take over, i.e. up to the point where cost of traded carbon starts to reflect the cost of abatement. The fundamentals-based approach here is based on the DECC Carbon Price Model (DCPM)³ runs with central projections of fossil fuel prices and economic growth combined with a medium length of perfect foresight of 6 years.
- Carbon prices in the high scenario are entirely fundamentals-based under a set of assumptions that includes higher economic growth, low prices of coal relative to gas and a greater length of perfect foresight, which all taken together contribute to high carbon prices.
- Carbon prices in the low scenario are also DCPM outputs but are based on a set of scenario assumptions that produces lower prices. These assumptions include lower economic growth and high prices of coal relative to gas.

Comparison with 2014 short-term traded carbon values

Figure 1 below provides a comparison of the 2015 modelling values with those published in 2014. High and low carbon price trajectories were produced in 2015 (but not in 2014) for sensitivity analysis to reflect uncertainties around future fossil fuel prices and economic growth.

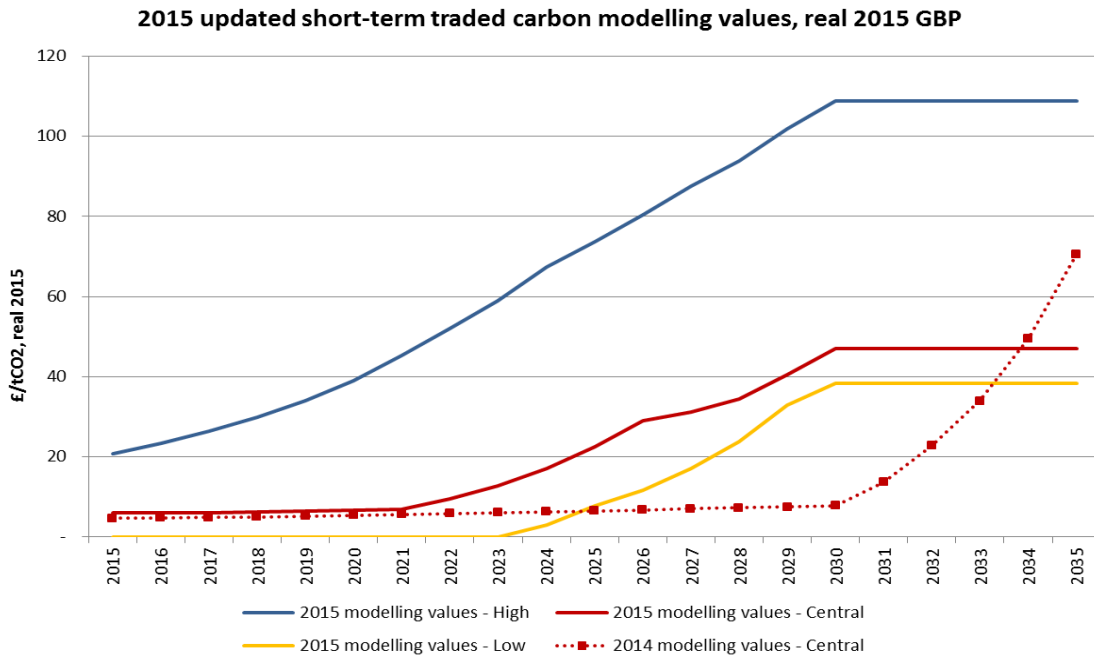
Modelling values in the central trajectory are produced using the same hybrid methodological approach as in 2014. However since the 2014 values were published, agreement has been reached at the EU level on a tighter 2030 GHG target and the removal of excess allowances by the Market Stability Reserve. The combined impact of these changes is that the carbon price is expected to rise earlier, and at a slower pace, relative to last year's projection.

² DECC's 2015 updated short-term traded carbon values for policy appraisal purposes can be found here: <https://www.gov.uk/government/publications/updated-short-term-traded-carbon-values-used-for-uk-policy-appraisal-2015>

³ DCPM is an in-house fundamentals-based model for estimating carbon prices. The DCPM estimates EUA prices in any given year based on the equilibrium between demand for and supply of abatement over a chosen number of future years (the foresight window of the model), which can be set to be between 1 year (i.e. no foresight) to 35 years (i.e. perfect foresight to 2050). Demand for abatement depends on the gap between Business As Usual (BAU) emissions and the EU ETS cap, while supply depends on marginal abatement costs (MACs).

Given the uncertainty when projecting carbon prices over longer time spans and difficulty with identifying the policy mix in the distant future, carbon prices are flatlined after 2030.

Figure 1: DECC’s updated traded carbon values for modelling purposes, £/tCO2e in real 2015 terms



Using short-term traded carbon values used for modelling purposes

Please note that these values are based on a specific set of assumptions with respect to the policy mix post-2020, cost of fossil fuels, emissions etc. Consequently these values should not be considered as “forecasts” of future prices and DECC accepts no responsibility for any liability arising from the use of these figures.

Modelled prices under the three trajectories reflect ‘what if’ scenarios based on specific sets of assumptions that are chosen to produce a plausible and meaningful range for sensitivity analysis. As such, they are not meant to depict a likely outcome in terms of the level of prices.

These sets of assumptions do not include any policy instruments to drive emissions down other than ETS and specific targets for renewables and energy efficiency in 2030. As a result, we assume that the EU ETS incentivises all the abatement required to achieve future emissions reductions. Modelled carbon prices in later years are therefore significantly greater than those observed in the nearer term. In reality it is likely that there will be other policy measures in place in future which would incentivise carbon abatement, reducing the effort required from the ETS and lowering the EU ETS price. Policy instruments such as the MSR that are included in the modelling are assumed to run over the entire modelling period as currently agreed at EU level. In reality, there could be changes to policy design, e.g. through the review of the MSR scheduled to happen within three years of the start of the operation of the reserve and at five year intervals thereafter.

DCPM-based prices are also subject to numerous modelling assumptions in the DCPM (including perfect foresight and discount rate) and POLES (including cost of abatement

technologies, deployment rates etc.) that attempt to simulate market participants' behaviour in future states of the world and as a result are subject to considerable uncertainty.

For advice on sensitivity analysis in respect of the modelling values, please contact DECC's appraisal guidance team at GHGappraisal@decc.gsi.gov.uk.

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