



Official Information request reference: 2021-014

24 March 2021

Email: [REDACTED]

Dear [REDACTED]

Thank you for your Official Information Act request on 24 February for “all data on the marginal abatement costs of electric vehicles which the Commission used in its models to support the draft emissions budget and plan released on 31 January.”

We have interpreted the scope of this request to cover the ENZ and C-PLAN models. Other models used by the Commission (the DIM-E and E-Market models) did not contain or use any data or information on electric vehicles.

#### ENZ

In the ENZ model, electric vehicle uptake is modelled from a vehicle buyer’s perspective using a Total Cost of Ownership (TCO) approach, as described in Chapter 7 of the draft Evidence report (pp. 73-74). The TCO of a vehicle sums up all discounted capital and operating expenses over a chosen ownership period. Within ENZ, an average TCO for the different vehicle types represented is calculated in each modelled year from several exogenous variables (fixed input assumptions, such as vehicle capital costs) and endogenous variables (dynamic factors, such as electricity costs).

The Commission published all cost and performance assumptions and data used in the TCO comparison in a technical assumptions spreadsheet on its [‘Data and modelling’](#) website page on 18 February. This includes:

- Vehicle capital costs
- Productivity penalties for heavy vehicles
- Fuel and electricity efficiency factors
- Fuel and electricity prices
- Maintenance costs
- Emissions values

That spreadsheet can be downloaded directly here: <https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Technical-assumptions-in-ENZ-energy-and-transport-2021-02-18.xlsx>

The ENZ model does not use or calculate marginal abatement costs (expressed as the cost per tonne of emissions abatement) for switching to electric vehicles. Instead, the model compares the TCO of electric vehicles to the TCO of internal combustion engine vehicles in each year to determine whether electric vehicle uptake is cost-effective. The uptake in the Commission’s scenarios occurs as electric vehicles become cheaper on a TCO basis.

#### C-PLAN

Electric vehicle uptake in the C-PLAN model is soft-linked to the ENZ model. This was done by tuning the C-PLAN model to produce a baseline level of transport electrification consistent with the ENZ baseline (Current Policy Reference) scenario. The level of transport electrification in the policy/mitigation scenarios is then endogenously modelled in response to the emissions cap imposed. This is the same approach as was used for electricity generation.

The specification of the quantity of transport electrification in the baseline means that it is not possible to also specify prices or costs – these are endogenously determined. Therefore, no cost data were used in C-PLAN.



While marginal abatement costs for switching to electric vehicles were not used in either model, these can be calculated using the published data and assumptions. The general method is described in the UK Committee on Climate Change's Sixth Carbon Budget Methodology Report (p. 25). This report is available here:

<https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-Methodology-Report.pdf>

Due to the interest in marginal abatement costs we have heard from stakeholders during our consultation period, we are considering doing further work in this area for our final advice to government.

I trust that the information provided fulfils your information request.

Please note that the Commission has a policy to proactively release OIA responses to help others have access to more information. Consequently, this letter will be published on our website with your name and contact details redacted to protect your privacy.

Kind regards



Jo Hendy  
**Chief Executive**  
**Climate Change Commission**