Transport: Heavy Vehicles - Electric

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side.

The heavy loads and long distances involved with heavy duty vehicles pose significant problems when considering electrification to eliminate tailpipe emissions. One such problem is the size of the battery required to provide sufficient range. The increased size and weight of the battery reduces the amount of cargo the vehicle can carry. Charge times also increase. Batteries are appropriate for vehicles travelling shorter journeys with lower payloads, such as local bus routes or a subset of HGV journeys. However, long distance and heavy transport services, such as freight and passenger rail, and articulated HGVs may require a different solution. Overhead power lines avoid the need for large batteries and are more appropriate for these types of applications with 65% of the passenger rail network already electrified.

At present, limited charging infrastructure (battery chargers or powerlines) represents a significant challenge to overcome. High capital costs of vehicles and disruption caused by installation of powerlines are also obstacles to mass deployment.

Key Interaction

Low-carbon electricity must be generated to maximise emissions savings from electrified transport.

If the combined share of all heavy vehicle fuel types (electric, hydrogen, PHEV and biofuel) exceeds 100%, the Calculator uses the priority order on the bottom right to determine which levers are applied.

Level 1

Efforts to increase uptake of electric vehicles are abandoned and shares remains at current levels.

Level 2

Electric vehicle share increases gradually to 80% of passenger rail, and 40% of rail freight/buses.

Level 3

Electric vehicle share increases more rapidly to 90% of passenger rail, 75% of rail freight, 60% of buses and 15% of articulated HGVs.

Level 4

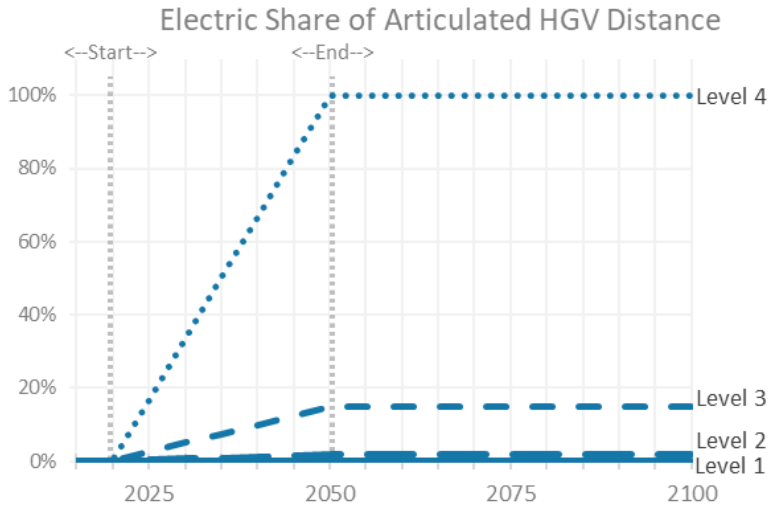
Battery technologies allow buses and lorries to be completely electrified. Articulated lorries and rail are electrified by overhead powerlines rather than batteries.

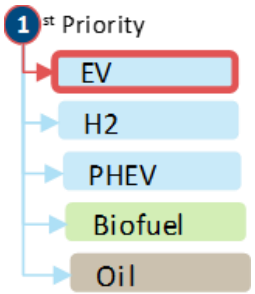
Default Timing

Start year: 2020, End year: 2050

Electric share of vehicle distance

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
HGV Articulated	share	0%	0%	2%	15%	100%
Bus	share	0%	0%	40%	60%	100%
Rail Passenger	share	65%	65%	80%	90%	100%
Rail Freight	share	8%	8%	40%	75%	100%





Lever Priority

Electric vehicles are the first in the priority order for heavy vehicles.

Where supply would otherwise exceed demand, measures lower in the priority order will be superseded by those above them. Conventional fossil fuelled vehicles meet any shortfall in demand.