

Assumptions and calculations underlying the data in the ZeroSE ‘Climate Action – Cutting Energy Emissions’ Factsheet.

Emissions

The data on emissions by sector for each local government area (LGA) in the South East Region were downloaded from [Snapshot](#) for each financial year from 2018/29 to 2021/2022 (the latest available). Note that the Snapshot data have changed since the previous ZeroSE Factsheets (v3.1 released in late 2021) were produced due to updates in the ways emissions are calculated .

Electric vehicles

It is assumed that there will be a 55% reduction in emissions by switching from a petrol vehicle to full (battery) electric vehicle (BEV). This is based on the average reduction in vehicle lifetime emissions of small, medium and large cars according to the [Electric Vehicle Council’s Emissions calculator](#).

The predictions for 2030 and 2025 targets in the Factsheets assume a value of 10% per year uptake (proportion of new vehicles registered that are BEVs) per year between mid-2023 and mid-2031 from a baseline of <1% of the fleet, i.e., from 0% to 80%. This assumption is based on the current Australia-wide trajectory (see page 6 of the [Electric Vehicle Council’s 2023 report](#)) assuming that uptake rates in the South East reflect the average for Australia as a whole. The latest data (Jan 2023) for uptake rates in the South East are 0.26% for BEV and 1.6% p.a. for hybrid EVs which are below the NSW averages of 0.38% and 1.88%. However, these uptake rates are doubling each year and thus expect to reach 8% for BEVs by Jan 2028, or higher assuming that BEVs will continue to replace PHEVs as the EV of choice.

It is further assumed that the vast majority of transport emissions are on-road (as opposed to aviation, rail or marine) and that the 10% uptake of EVs applies to the whole of the on-road fleet (i.e., freight trucks, buses as well as cars).

To calculate the total reduction in transport emissions by 2030/2031 compared to 2022/2023 values due to an average of 10% annual uptake of EVs, the following formula was applied:

Reduction in total transport emissions = 0.8 x 2022/2023 total transport emissions x 0.55 x proportion of total transport emissions due to on-road vehicles.

To calculate the 2025/2026 predicted reduction in emissions, the 0.8 in the above formula was replaced with 0.375 (year 3 of the 8 year period). This assumes a linear rather than exponential rate of growth: the latter is closer to reality in the early adoption phase. However, the error is considered to be small in relation to the overall predicted impact by 2030/2031.

Rooftop solar

Data on numbers of solar installations and their capacity from 2007 to 2024, separated by LGA based on postcodes, was downloaded from <https://apvi.org.au/>. Systems greater than 100kW (i.e., not for household use) were excluded, resulting in an average size of approximately 7kW per rooftop solar installation by 2023. These data showed an average trend of 5% per year

uptake averaged across all South East LGAs with very little variation between LGAs, consistent with national trends (see [National Report for 2023](#)).

It is assumed that a 7kW system gives a 65% reduction in a household's use of energy from the grid, 60% of which is assumed to be from non-renewable sources ([2023 figure](#)), giving an emissions reduction impact on household electricity of 39%.

The predictions for 2030 and 2025 targets in the Factsheets assume a 10% per year uptake (double the current value in the South East) between 2022 and 2030 from a baseline of 5% of households in 2022, i.e., from 5% to 85%.

To calculate the reduction in domestic electricity emissions due to an average of 10% annual uptake of rooftop solar over the 8 years from 2022/2023 to 2030/2031, the following formula was applied:

Reduction in total electricity emissions = 0.8 x 2022/2023 total electricity emissions x 0.39 x proportion of electricity emissions that are from domestic consumption.

To calculate the 2025/2026 predicted reduction in emissions, the 0.80 in the above formula was replaced by 0.375.

Notes on LGAs and postcodes

In order to obtain numbers of EVs and solar installations by LGA, the data by postcode were downloaded and then each postcode was assigned to an LGA. However, some postcodes are shared across LGAs, including LGAs outside (bordering) the South East. Where postcodes were shared across LGAs, the postcode was assigned to the LGA with the largest area for the postcode. Exceptions to this rule were if it was shared with an area within the ACT in which case it was assigned to the ACT. Data from postcodes outside the South East after applying this rule were excluded from the counts for the LGA.