

SolarTech Power Solutions

Distribution of energy storage charging stations in New Zealand



Overview

The uptake of electric vehicles (EV) is closely interlinked with the availability of charging infrastructure. Fast charging stations (FCS) can facilitate the uptake of EV, but their installation requires significant invest.

How does EV uptake affect the number of EV charging units in New Zealand?

Only in later periods, the actual uptake of EV in New Zealand has an effect on the number of additionally installed FCS. The higher the uptake of EV will be in 2025 and 2030, the more charging locations have to be opened to serve the demand. When considering the required total number of charging units, there is a dependence on the EV uptake level.

Should EV charging stations be a condition for the deployment of charging stations?

As a condition for the deployment of charging stations, the optimization model incorporates that at least 80% of the total EV flow volume on the considered routes have to be adequately covered by charging infrastructure in every time period. However, this is a condition for the island as a whole, and local differences can be significant.

How can infrastructure providers flexibly distribute charging units?

For an infrastructure provider, this means that it is possible to flexibly distribute charging units to other existing stations that currently provide only a small number of units in case the grid is insufficient to handle a desired large FCS at a specific location.

How many distribution substations are there in New Zealand?

For this a Python based code is applied. The locations of the substations are taken from OSM. All 'distribution substations' (224 substations) and substations that are explicitly stated to transform from 33 kV to 11 kV (6 additional substations) are taken for the northern island of New Zealand.

Are fast charging stations a viable option for EVs?

Fast charging stations (FCS) can facilitate the uptake of EV, but their installation requires significant investments affecting their profitability. An optimal determination of charging locations and capacities based on associated costs can help to provide infrastructure efficiently.

How many charging units are installed in a charging station?

Several partly overlapping bubbles of different size at a single location mean that a charging station with a set of charging units is installed in a preceding period and further charging units are added in later periods. All in all, in 2020, 18 FCS with 114 charging units are installed.

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