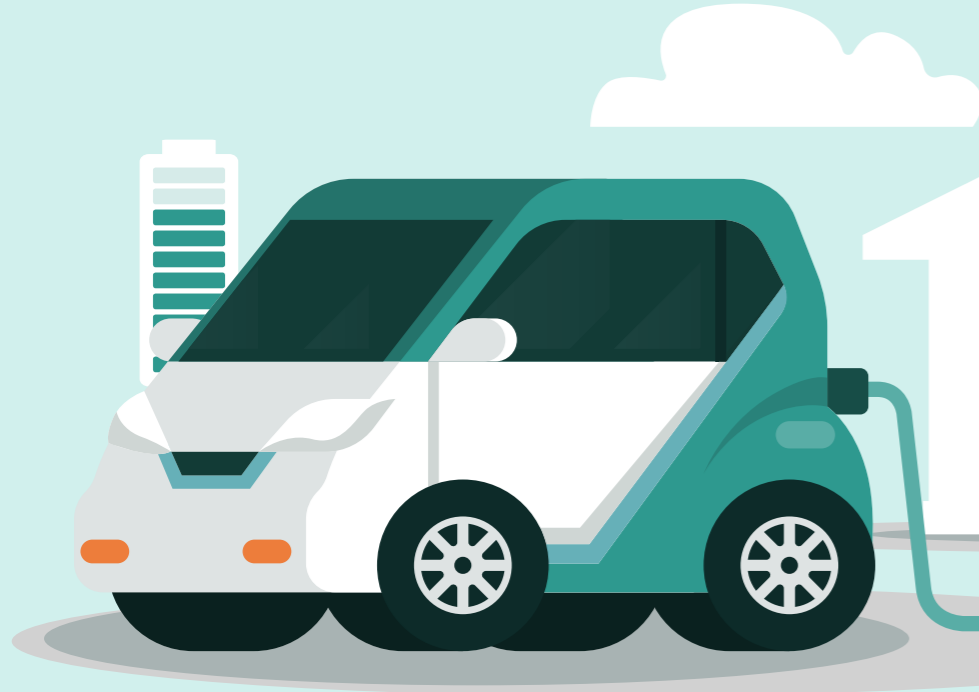


EVs

The majority of the New Zealand EV fleet can be charged with the unused mains capacity of a typical home.



Number of EVs in New Zealand

17,026 EV fleet (Sep 2019)

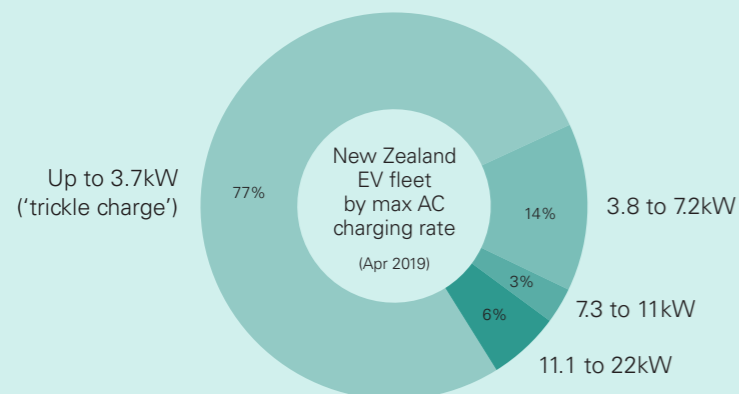
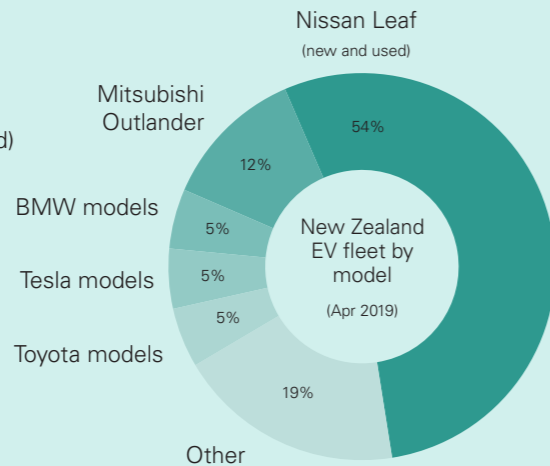
6,767 EV registrations (last 12 month period)

105% 3-year CAGR EV fleet size

0.35% EV as % of light vehicle fleet

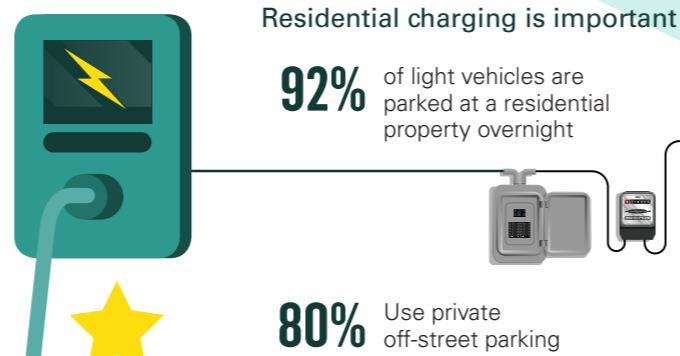
2.3% EV as % of light vehicle sales (2019)

Composition of current EV fleet



Chargers

A wide range of chargers are available to buy in New Zealand. The cost of faster, wall-mounted chargers is higher, but the additional cost of 'smart' features is lower.



Number and types of chargers currently available in New Zealand

>65 different residential charger models **13** suppliers of chargers available

x12 Charging cables
\$500-\$1,000

Trickle charge only up to 3.7kW

>80% residential EV charging in New Zealand via charging cables

x27 Basic wall mounted chargers
\$1,000-\$4,000

Slow/Medium charge 3.7 to 22kW

\$500 to >\$5,000 for installation costs (depending on complexity)

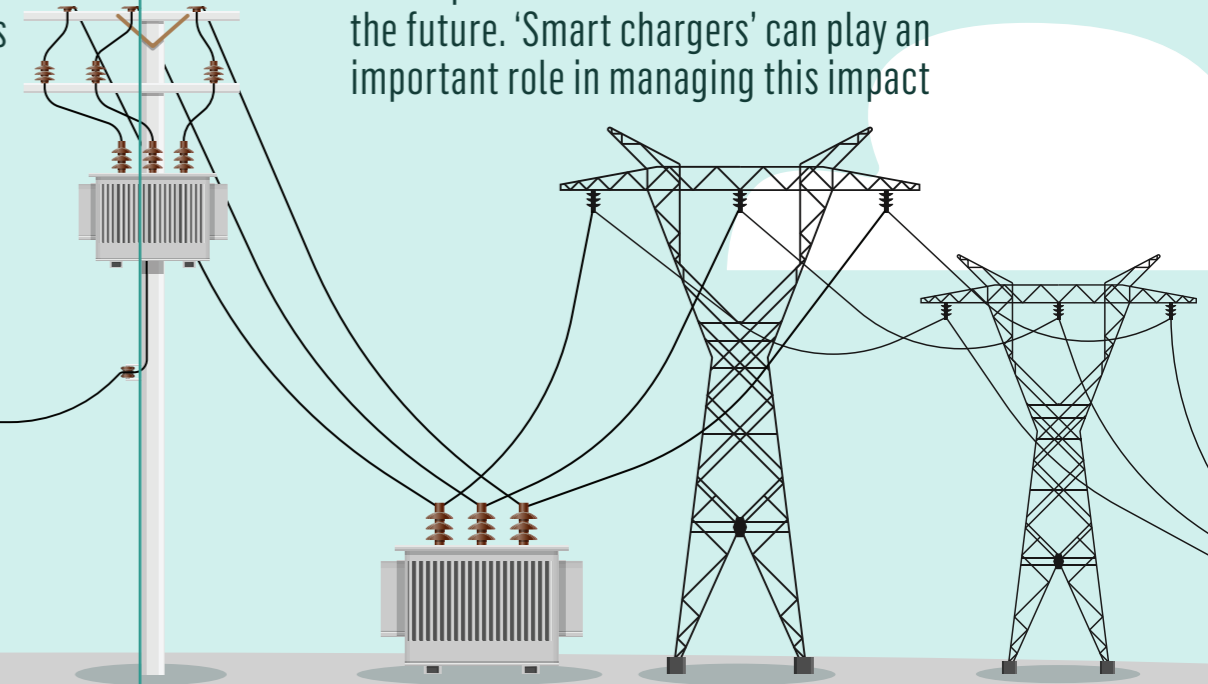
x26 'Smart' chargers
\$1,400-\$5,000

Smart Slow/Medium charge 3.7 to 22kW

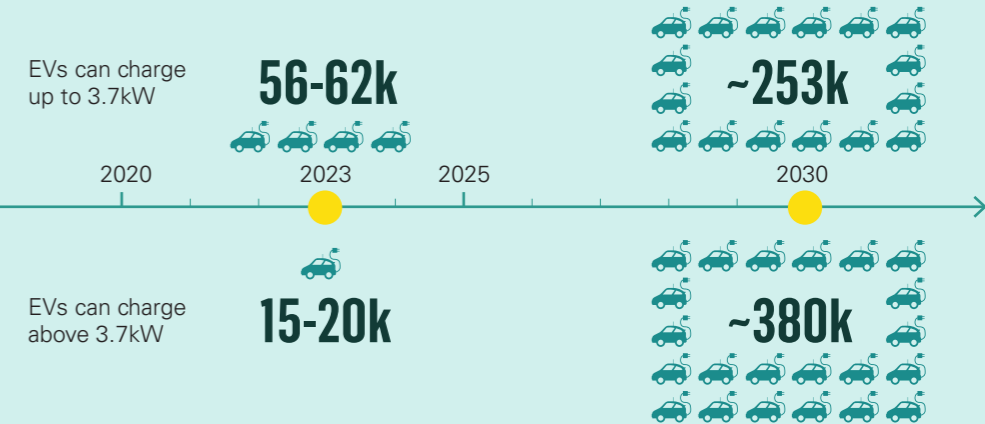
60 amp typical fuse rating for New Zealand houses, charging at >3.7kW may be an issue for most New Zealand houses

Network impact

EV's impact on networks will increase in the future. 'Smart chargers' can play an important role in managing this impact



Projected vehicles and charging requirements



Until 2023, 70-80% of the EV fleet will consist of vehicles with a maximum AC charging rate less than 3.7kW. In the next decade, the number of EV's is expected to increase above 600,000 and a growing share will support faster charging at home. This may cause electricity load balancing issues at the home and network level.

Managed charging, via smart chargers can reduce the future impact of EV's on the electricity system. Ideally, NZ will take advantage of the next few years to develop and implement systems and policies that incentivise and make effective use of smart charging technology to avoid increasing network peaks and resulting network reinforcement from the uptake of electric vehicles.

Future technologies that underpin managed charging could include:

Next 3-5 years

Manual charging management

Automated network level charging management

>5 years

Co-ordinated charging

Bi directional charging